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William Procter Jr

PROCEEDINGS

OF THE

AMERICAN PHARMACEUTICAL ASSOCIATION

AT THE

Twenty-Second Annual Meeting,

HELD IN LOUISVILLE, KY., SEPTEMBER, 1874.

ALSO THE

CONSTITUTION AND ROLL OF MEMBERS.

PHILADELPHIA:
SHERMAN & CO., PRINTERS.
1875.

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1874-75.

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REPORTER ON PROGRESS OF PHARMACY.

C. Lewis Diehl,	Louisville, Ky.,	1873–75

LIST OF QUERIES

TO BE ANSWERED AT THE TWENTY-THIRD ANNUAL MEETING, IN 1875, AT BOSTON, MASS.

QUERY 1. An essay on the drug mills now furnished by the manufacturers, giving practical advantages of the various kinds and the results of experiments proving their ability to produce powders fine enough for most pharmacal purposes, if such exists.

Referred to Andrew Blair, Philadelphia.

2. Is the Ether obtained from manufacturing chemists as pure and strong as the Pharmacopœia directs, and what are the usual impurities?

Accepted by P. W. Bedford, New York.

3. Are the Sugar-coated Pills vended in our market always what they purport to be? A paper giving the results of an examination of the various makes.

Accepted by David Hayes, New York.

4. What progress has been made in manufacturing important medicinal chemical preparations within the last few years which formerly were exclusively imported?

Referred to A. H. Jones, Philadelphia.

5. What is the composition of the so-called tasteless Iron preparations originated by J. L. A. Creuse?

Referred to Prof. G. F. H. Markoe, Boston.

6. The French filtering-paper that is imported at the present time contains an appreciable amount of soluble and a large amount of coloring matter; what substitutes can be used or what can be done to cause an improvement in its quality?

Referred to Joseph S. Talbot, Boston.

7. Phosphuretted resin, by A. W. Gerrard, has been introduced as an eligible mode of administering phosphorus in pilular form. Can an agreeable emulsion be prepared from it, or a desirable liquid preparation?

Accepted by George W. Sloan, Indianapolis.

8. What drugs are now successfully cultivated here which some years ago were obtained from foreign countries?

Accepted by B. O. Wilson, Boston.

9. An essay on Paraffin, and what are its uses in pharmacy.

Referred to B. F. Stacey, Charlestown, Mass.

10. It has been asserted that Chloral Hydrate possesses powerful antiseptic properties, and has been used to preserve anatomical preparations; an essay on this subject.

Accepted by T. Roberts Baker, Richmond.

11. There is reason for believing that our Oleum theobromæ is largely adulterated. How can adulterations be detected, and to what extent do they exist?

Accepted by Gustavus Ramsperger, N. Y.

12. What is the amount of benefit derived from the introduction of glycerin into the formulas for fluid extracts of the U. S. Pharmacopœia?

Accepted by J. Faris Moore, Baltimore.

13. Within the last few years a number of new suppository moulds have been introduced of different forms. Which of them seems best adapted for practical purposes?

Accepted by R. V. Mattison, Philadelphia.

14. Cinnamon water, when made strictly by U. S. Pharmacopœia, is apt to become cloudy from deposition of cinnamic acid. How may this be prevented without impairing the usefulness of the preparation?

Accepted by W. Partlow Thompson, Baltimore.

15. What are the causes of the difficulties (precipitation) which some pharmacists complain of in the preparation of Spiritus Ammoniæ Aromaticus, U. S. P.?

Accepted by William McIntyre, Philadelphia.

16. An essay on Mezquite gum; it is said that large quantities can be obtained. Can it not be used advantageously in pharmacy?

Accepted by A. W. Miller, Philadelphia.

17. Would it be advisable to decrease the specific gravities of some of the mineral acids of the Pharmacopœia which are supplied by manufacturers? It is alleged by some makers that such strong acids are not readily made, and that no advantage is derived from using them of such strength.

Accepted by P. W. Bedford, New York.

18. An examination of English narcotic extracts for quality.

Accepted by P. W. Bedford, New York.

19. It has been repeatedly asserted that the Castor Oil of the present day is deficient in strength, larger doses being required than formerly. Is this so, and is it on account of adulteration?

Accepted by Edward A. Smith, Baltimore.

20. Pancreatic preparations have made their appearance in the market recently in considerable variety; what value do they possess, and what is the most eligible mode of administering?

Accepted by W. S. Thompson, Washington.

21. What is the most desirable process for making Iodoform; how can it best be dispensed; and how can the vessels in which a preparation of it has been made be quickly deodorized.

Accepted by H. M. Wilder, Philadelphia.

22. An examination into the accuracy of the graduated measures supplied by the jobbing druggists or manufacturers; which kind are most reliable?

Accepted by W. P. Thompson, Baltimore.

23. Can the pest, commonly termed the "Potato Fly" (Cantharis vittata), be made serviceable in Pharmacy; what preparations would be most useful?

Accepted by William H. Egle, M.D., Harrisburg.

24. Chlorodyne is frequently prescribed by physicians, and seems to be a useful preparation in many cases; give a formula for it which would be suitable for introduction into the U. S. Pharmacopœia?

Accepted by J. F. Hancock, Baltimore.

25. Pharmacists have repeatedly complained that Sulphate of Morphia, as supplied by our manufacturers, is not as soluble as it should be; and strong hypodermic solutions are not readily made; why is this, and what is the remedy?

Accepted by Charles Rice, New York.

26. What causes Ergot of Rye to deteriorate, and what conditions favor the deterioration; how may it be best preserved?

Accepted by J. L. Lemberger, Lebanon, Pa.

27. Is Artanthe elongata really the true source of the Matico plant; if not, what plant furnishes the drug?

Referred to Prof. J. M. Maisch.

28. What are the objections to having the United States and British Pharmacopœias *agree* in the strength of those preparations which are common to each?

For general acceptance.

29. An examination of Croton chloral hydrate, defining clearly its present therapeutical position.

Referred to William H. Egle, M.D., Harrisburg, Pa.

30. Can a process be devised for the production of Apomorphia, which will reduce the cost so that it may become available in pharmacy?

Referred to Charles Rice, New York.

31. What is the composition of the nostrum Vinegar Bitters? An essay on its composition with a view of exposing this fraud upon the public.

Accepted by O. Eberbach, Ann Arbor, Mich.

32. What species of insects are found in America which could be used for vesicating purposes; are any of them to be had in sufficient quantities to become an article of commerce, and how do they compare in strength with the Cantharis vesicatoria and other species found in commerce?

Accepted by William Saunders, London, Ontario, Canada.

33. Rhubarb has of late been much damaged by insect pests; does the rhubarb as shipped from China contain the insect, or does it become infested after arrival in Europe and America?

Accepted by William Saunders, London, Ontario, Canada.

34. In the arrangement of the dispensing department of a pharmacy, what advantages are there in having the counter upon which prescriptions are prepared in full view of the customer?

Accepted by J. F. Hancock, Baltimore.

35. Santonin has been seen in the market in thick prisms, very different in appearance from the usual flat crystals; is this due to crystallization from a different liquid from that ordinarily used?

Accepted by O. Eberbach, Ann Arbor, Mich.

36. To what agency in Blue Mass is the medicinal effect due; if to a small quantity of oxide, can a preparation be devised which will be more uniform and certain in its results, formed by mixing the oxide intimately with an inert powder?

Accepted by J. F. Hancock, Baltimore.

37. Can the contamination of Pyrophosphoric Acid be prevented in Dilute Phosphoric Acid when the latter is prepared from the Glacial Phosphoric Acid of different manufacturers?

Accepted by Louis Dohme, Baltimore.

38. Is Pancreatin converted into Pepton when it is digested with Acidulated Pepsin?

Accepted by E. Scheffer, Louisville.

39. It is asserted that it is highly dangerous to mix Nitric and Carbolic Acids on account of the violent and instantaneous explosions that almost invariably occur; what are the proportions most likely to occasion the explosions, and what are the chemical reactions resulting when these two substances are brought into contact?

Accepted by C. Gilbert Wheeler, Chicago.

40. What are the best tests of purity of Hydrate of Chloral?

Accepted by Joseph Roberts, Baltimore.

41. A quantitative estimation of the Carbonic Acid in the numerous brands of Bicarbonate of Soda existing in the American market, and of the impurities.

Accepted by P. W. Bedford, New York.

42. Medicated Waters. How do the waters prepared from the oils with Magnesia compare with those distilled from the fresh ingredients?

Continued to N. H. Jennings, Baltimore.

43. The relation of Physician and Pharmacist. Is the pecuniary compensation of the Pharmacist adequate in comparison with that of the Physician?

Continued to E. P. Nichols, M.D., Newark, N. J.

44. An essay on the preparation of the various bromides of the organic and inorganic bases used in American pharmacy.

Continued to Charles Bullock, Philadelphia.

45. Can the formula for Scammony Resin (U. S. P.) be improved, and what is the objection, if any, to the exhaustion of Scammony by Alcohol at ordinary temperature and simple evaporation of the tincture?

Continued to Prof. George F. H. Markoe, Boston, Mass.

46. Can a permanent consistency and specific gravity be imparted to solid extracts by the addition of Glycerin, without injuring their quality?

Continued to Prof. O. Oldberg, Washington, D. C.

47. An essay on Calabar Bean, giving the readiest method of obtaining the various pharmaceutical preparations, and isolating its active principle.

Continued to G. W. Kennedy, Pottsville, Pa.

48. What is the character of the principle to which the bitterness of Eupatorium perfoliatum is due?

Continued to A. Boyd, Utica, O.

49. Can the Alkaloids of Cinchona be extracted together in a crude form, yet sufficiently pure to permit a ready detection of adulterants; and if so, can the process be profitably carried out by the pharmacist?

Continued to Randal Rickey, Trenton, N. J.

50. Medicinal Soap. Mr. G. H. Barkhausen gives, in *Archiv der Pharmacie*, pp. 20–21, January, 1873, a process for preparing medicinal soap, as follows: 100 parts of olive oil are mixed with 150 parts of an alcoholic solution of caustic soda, containing 12 parts of the latter. The mixture is heated to 212° F. until solution is effected, 200 to 300 parts of water are added, and the solution is evaporated to dryness. One of the advantages claimed is that it contains a minimum quantity of alkali. Can this soap be substituted with advantage for Castile soap in the preparations of our Pharmacopœia, into which soap enters as a constituent?

Continued to A. N. Marion, Baltimore.

51. An examination of commercial Citrate of Iron and Quinia for its quinia strength.

Continued to Linus D. Drury, Boston, Mass.

52. How may concentrated preparations from Aromatic Drugs be best prepared, so that the preparation shall be permanent, and represent all the active constituents of the drug?

Continued to Prof. George F. H. Markoe, Boston, Mass.

53. An essay, suggestive and critical, on the best plan of arranging and managing the store-rooms and cellar of a well-conducted dispensing store.

Continued to J. F. Hancock, Baltimore.

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PREFATORY NOTICE.

IT is gratifying to the undersigned that they are enabled to present this volume of the Proceedings of the American Pharmaceutical Association at its Twenty-second Annual Meeting at so early a date, notwithstanding the occurrence of delays beyond the control of the Executive Committee. The Reporter on the Progress of Pharmacy stated before the meeting (see page 550) that it would take some time to finish his report, and by the time the last portion of this report was received, nearly all the illustrations contained in this volume had been engraved, and the whole phonographic report by Mr. James H. Slade received, so that the first portion of the manuscript could be handed to the printer November 3d. That the report of the Committee on the Drug Market was missing was not noticed until about two weeks before it was needed to be inserted in its proper place as the first of the reports of committees. It was not deemed advisable to delay the publication of the Proceedings on this account, and hence this report had to be inserted in an appendix, it having reached the editor's hands December 18th.

The present volume has the matter arranged in an entirely different manner from what it had been customary heretofore; the Secretary called attention to this proposed change in his report, printed on page 470. This change is based upon the belief that all reports and essays to be published in the Proceedings *are* ready at the time of the meeting; the editor may then commence to print as soon as he returns home, and the only matters coming in afterwards (the report on the Exhibition and the phonographic report) may be easily prepared for publication and be ready for the printer when needed. Such a course, if strictly adhered to, will reduce the time when the Proceedings may reach the members, from two to three months, and it is believed will do away almost entirely with the arguments which have been advanced in favor of publishing essays before the Proceedings appear to which they have been originally contributed.

It has been deemed proper to append to the Secretary's report, in footnotes, the resolutions passed by the International Pharmaceutical Congress, the official publication of the transactions of which have reached the Secretary just in time to make the additions for the present volume. It should be stated here that the discussions before the Congress have been mostly in favor of extending the interval between its meetings to four or five years, so that there appears to be little hope of having the Fifth Pharmaceutical Congress meet in this country in 1876, unless the officers of the pharmaceutical societies in Europe should consider the International Exposition in Philadelphia and the Centennial celebration of the existence of the United States a fitting opportunity to convene the meeting in this country, and become acquainted with the status of pharmacy in America.

The reports and papers read at the meeting have all been published, and generally, in a footnote, the session has been mentioned at which the paper was read, so as to facilitate the search for remarks that may have been made in connection with the subject. It is proper here to give a few dates in order to prevent a remark in Mr. Patten's paper, near the bottom of page 346, from being misinterpreted. The druggists and apothecaries of Philadelphia held their first meeting February 23d, 1821, to take action on the resolutions of the Board of Trustees of the University of Pennsylvania to confer the degree of Master of Pharmacy. At the second meeting, held March 13th, 1821, it was resolved that a college of apothecaries be formed, and two weeks later this was organized by the election of officers. One year later (March 21st, 1822) the name was changed to the Philadelphia College of Pharmacy. The charter of the college was approved by Governor Joseph Heister, March 30th, 1822.

The excellent likeness of Professor William Procter, Jr., which is published with the present volume, has been printed from the steel-plate engraved by order of the Publishing Committee of the American Journal of Pharmacy, and represents our deceased fellow-member in the vigor of manhood, when most of his important researches were made, and as he was known to the members of this Association previous to the year 1867.

The prices of the "Proceedings" have been fixed as follows:

1851, 1852, 1853, 1855,	unbound,	$0 25 each.		
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1854 and 1856, out of print; none published in 1861.

The entire set of bound volumes, the first four in paper covers, will be furnished at $36; the set of unbound volumes, including the bound ones for 1860, 1862, 1863, are held at $30. The prices for entire sets are *exclusive of postage or express charges.*

The Twenty-third Annual Meeting will be held in the City of Boston, Mass., on the first Tuesday of September (7th), 1875, at 3 o'clock P.M.

George W. Kennedy,
Chairman of the Executive Committee, Pottsville, Pa.

John M. Maisch,
Permanent Secretary, 145 North Tenth Street, Philadelphia.

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PROCEEDINGS

OF THE

TWENTY-SECOND ANNUAL MEETING

OF THE

American Pharmaceutical Association.

REPORT ON THE PROGRESS OF PHARMACY,

FROM JULY 1, 1873, TO JULY 1, 1874.

BY C. LEWIS DIEHL.

YOUR reporter aimed to have his report ready to submit to this meeting, but was prevented by his private business engagements from quite finishing it. It is, however, so nearly completed, that early in October it will be in the hands of the Permanent Secretary, and will be found as full as previous reports. In lieu of the usual prefatory remarks, your reporter prefers to open his report with such

GENERAL SUBJECTS

as cannot well be classified under the usual headings, or to which he considers it desirable to draw special attention.

The Status of Pharmacy, both in the United States and in Europe, has been the subject of a number of papers. Chief among these are the papers of Phœbus, Hlasiwetz, and Danckwortt, on the Status of Pharmacy in the German Empire ;

by Baudrimont and Barbet, on French Pharmacy; the criticisms on the same subject in the Pharmaceutical Journal and Transactions, and a paper by Dr. Frederick Hoffmann, of New York.

The following quotations from Dr. Hoffmann's paper, in which he reviews the papers of Prof. Hlasiwetz and of Mr. Danckwortt, and their bearing on American Pharmacy, will explain the present status of Pharmacy as viewed from a German standpoint:

"Prof. Hlasiwetz, formerly an apothecary, now Professor of the Imperial Polytechnic School of Vienna, in a lecture on Modern Pharmacy, said in substance:

"'Until recently chemistry had its ablest and most useful representatives among the pharmacists, and for a long time this profession has pre-eminently supplied the chairs of chemistry of the universities with professors, to whom we owe the vast amount of labor and discoveries which were necessary to bring practical and theoretical chemistry to its present scope and position. But this has greatly changed by degrees; the consequent rapid progress has called forth a chemical industry of the most varied description and extent, which, in its rapid strides, has substituted the method of manufacturing on a large and commercial scale for those on a small scale in the laboratory of the pharmacist. This change in the scope and drift of pharmacy has deprived the pharmacist of one of the principal objects and profits of his legitimate business, and since the fact has become fully established that he cannot enter into competition in the manufacture, neither in regard to purity nor to price, there is nothing left to his choice than to dispose and retail the products of the former. Not only the whole series of medicinal chemicals and alkaloids are now supplied by the manufacturer cheaper and, as regards the latter substances, better, but also those pharmaceutical preparations which belong pre-eminently to the province of the pharmacist; as, for instance, fluid extracts, tinctures, syrups, ointments, plasters, etc.

"'Since the inauguration of this sweeping change dates the decline of the so-called pharmaceutical chemistry, and all that the pharmacist yet applies is a moderate degree of skill for the establishment of the identity and quality of the preparations as supplied by the manufacturer. But even this limited sphere of proficiency is encroached upon by the manufacturers by offering on the labels of their preparations brief instructions for ready tests, and by supplying pure and ready-made reagents, so that the tests may be made by any skilled and informed person.

"'Our schools and universities still furnish a sound pharmaceutical education and a stock of chemical knowledge; but the truth is that these attainments, as a rule, do not bring fruit, for the reason that pharmaceutical practice has ceased to afford any longer the former compensation and opportunity of application, nor a sufficient impetus to practically cultivate the acquired proficiency.

"'Moreover, the advanced state of rational medicine has discontinued the use of many remedial agents, and has greatly limited not only the list of Materia Medica but also the former liberal administration of medicine. The consequence of this restriction is a decrease of the legitimate business and income of the pharmaceutist; being formerly a remunerative pursuit, it hardly furnishes any longer a respectable living to a great many highly educated men, and we see, therefore, the pharmacist enter more and more upon mercantile resources for subsistence, with the aim to gain, on the other hand, as a dealer, what the professional scope of his business falls short to supply; he enriches his stock with homœopathic and with patent medicines, and enters into competition with the dealer in fancy articles, with the perfumer, the confectioner, etc.

"'The business of the pharmacist depends for the future largely upon the drift of the manufacturing business, which, when it should also extend its aim and scope to the production of the medicinal substances in ready-dosed and elegantly prepared forms, will deprive the pharmacist, more or less, of the last remnant of his proficiency. This inroad has already commenced, and bids fair way to an increasing extent and to success; it tends to relieve the physician from the necessity of prescribing so many grains of Dover's powder, of quinia, of calomel, etc., to be rubbed up with sugar and divided into so many doses; he will merely have to direct his patient to buy a number of dosed capsules or tablets. He will soon find all the chief formulæ of his dispensatory provided in elegant forms and envelope, disguising smell and taste, and both the physician and the patient will gladly dispense with the old repulsive form of mixtures, decoctions, powders, etc. The great number of vegetable drugs of uncertain value and variable quality will be discarded, and will be replaced by the active principles, obtained from them in a pure and stable form, so that the Materia Medica of the rational physician will henceforth be like that of the homœopathist, ready prepared and dosed, and all emanating from the manufacturing establishments.'

"When system and method will extend and consummate this mode of administration of the remedial agents, nothing will be left of the pursuit of the pharmacist than a retail dealer of the products of the manufacturer of medicinal articles."

The remarks of Mr. Danckwortt on the same subject correspond in the main with those of Prof. Hlasiwetz, although the former seems to regard the changes observed, more positively as the necessary consequences of the progress in science and the rapid progress of general culture among the masses.

The drift of Dr. Hoffmann's remarks is to the effect, that while American Pharmacy in its trade relations has practically an advantage over German Pharmacy, and cannot therefore be injured in a similar manner by being displaced from a professional basis, and while it, probably, will meet with fewer difficulties on its high road to improvement, it will nevertheless have to solve some of the problems referred to in the papers of Hlasiwetz and Danckwortt. "Compared to the physician and tradesman, the pharmacist occupies an exceptional position; the former applies his individual knowledge and skill without investment of capital or risk, and without any restriction; the merchant chooses his wares according to demand and want, and can control his investments quantitatively and qualitatively; he employs laborers or clerks with less knowledge and without responsibility; his wares usually retain their value, and are less prone to deterioration. In this material age, and concrete and practical country of ours, there cannot be expected for any length of time, an acquisition of talent and skill, or a permanent and steady elevation of a calling whose resources appear to be everywhere on the decline, and which involves an amount of time, resignation, and responsibility as no other pursuit requiring a similar amount of learning, and which, for superior attainments and proficiency, does not offer an adequate equivalent in the shape of pecuniary compensation."

The editor of the Pharmaceutical Journal and Transactions reviews the papers of MM. Baudrimont and Barbet on the subject of Pharmacy in France. M. Baudrimont points out, that the majority of accidents, occurring through the substitution of one medicine for another, such as arseniate of potassium for the sulphate, of sulphate of zinc for sulphate of magnesium, of acetate of barium for sulphovinate of sodium, etc., which had occurred in France within a short period, have their origin in mistakes committed outside of pharmacy. He therefore insists that it is incumbent upon every pharmacist scrupulously to examine every chemical before receiving it into stock, in order not only to identify it, but to recognize any products of alteration or substitution which may be present in it. As to the Galenical preparations, such as the powders, tinctures, extracts, syrups, etc., he considers that every principal of a pharmacy should hold it to be a point of honor never to employ any that he has not manufactured himself, rejecting absolutely preparations of this kind found in commerce. M. Martin Barbet, the reporter of a committee of the Bordeaux Pharmaceutical Society, gives his opinion to the effect, "that it is to the decadence of French pharmacy, to the insufficient instruction, notorious incapacity and idleness of French pharmacists that the uninterrupted series of accidents has been due." From his report the editorial quotes the following: "Where are the pharmaciens who prepare their own distilled waters, their extracts, their powders, alcoholate tinctures, etc.?" "Read the remarkable prospectuses of all the new houses; you will see that they consider themselves to be responding to an undisputed want, and you will find in every line the irrefutable proof of the degradation into which the profession has fallen. Under the fallacious pretext of coming to our aid, while in them it is the bait of lucre, they sell you fluid extracts for fear you cannot make them dissolve; titrated solutions in case you cannot calculate; concentrated products of all sorts, for the preparation of simple and compound syrups, alcoholates, etc., because you are no longer apt to make either infusions or decoctions or manipulations of any sort. It would not be surprising to see before long a means of sparing the trouble of making pills and draughts. And thus we have allowed the pharmacist to be turned into a mercantile man without initiative and without value."

"Beneath the irony of this language—continues the editor of the Pharmaceutical Journal and Transactions—there lies a substantial layer of truth, and truth that is at least as applicable, and probably more so, to the pharmacy of this country (Great Britain) as to that of France. Of course, it will not do to deny the advantages attached to the conducting of some operations on a large scale. But it will be politic in the pharmacist not to lose sight of some of the most important duties of his calling, and thus sink to the rank of intermediary between the manufacturing druggist and the public." Such must be the natural consequence in proportion as practical pharmacy is discarded from our pharmacies. As a matter of business, each manufacturer will try to attach some special repute to even the Pharmacopœia article of his production; prescribers will exercise their whims and fancies as to the ingredients entering into their prescriptions; and more often than now—though now it occurs much too often—the laboratory man will have to be converted into a swift-footed messenger to range over half a town before a mixture can be made up. Those who think this to be an exaggeration, should study the discussions which continually take place in the American pharmaceutical societies upon the sale of elixirs."

Many of the points made by the gentlemen above referred to, apply with equal if not greater force to the condition of Pharmacy in the United States. This difference may, however, be pointed out, that, while Pharmacy in Europe seems to be tending toward the point from which we started, American Pharmacy has tended upwards—and markedly so since the organization of this Association—and will manifestly reach a proper status, if we continue in the efforts so well inaugurated, and heed the suggestions which our fellow-pharmacists across the Atlantic are called upon to make to themselves.

While on the topic of international pharmacy some insight into

Chinese Pharmacy may not be out of place. Debeaux has published a little volume on the "Pharmacy and Materia Medica of the Chinese," which has been translated and condensed by H. Böhnke-Reich (Arch. Ph., June, 1873), and from which the following is extracted:

"*The shops* in the larger cities are often so well arranged as to render it difficult to suggest an improvement. Such a shop consists of an apartment intended for the reception of the customers, another in which the apothecary and his assistants are engaged, and these are divided by a third, in which the dry medicinal agents are stored in drawers. Above the drawers are shelves for the reception of porcelain and glass vessels, in which are contained conserves, electuaries, and powders. The furniture is made of oak, ash, pine, and occasionally of rosewood, and is often painted or varnished. The drawers are all properly labelled with yellow or red paper labels. In the rear of the shop proper are the laboratory and the store-room, which are arranged orderly and methodically. The most popular form for the administration of medicines are

"*Pills.*—These are often composed of substances which would be disgusting to the European, and are variously colored, blue, red, etc. The substances necessary to their composition—among which are most popular powdered metals and minerals of various kinds, catechu and extract of opium, hair, dried skins and bones of animals, powdered canella, rhubarb, cardamom, ginger, galanga, etc., starches, resins, and gum-resins—are mixed in granite mortars with water, gum, honey or syrup until a pill mass is obtained, which is rolled out, divided equally with a knife, and formed properly by hand. The following formula will give a general idea of Chinese pills:

"*Py-choang* (Yellow Sulphide of Arsenic).—A sufficient quantity is heated in a vessel of cast iron until vapor is no longer evolved ; it is then powdered, and a little of the oil of *Hôang-hoa* (from the fruit of Carthamus tinctorius) is added ; the mixture is heated and formed into pills of the size of a small pea.

"*Powders* are also used quite extensively, seldom simple, more generally compound. One of the most remarkable formulæ for a compound powder is the following:

"*My-to-seng* (Chromate of Lead).—A sufficient quantity is powdered, the powder is introduced into jujube berries from which the seed had been removed, and the berries so filled are then charred, again powdered, and given in doses of about seven grammes.

"*Ointments and Plasters* are also quite popular, and are usually prepared from lard and resins of various kinds. They are usually soft, and are obtainable ready spread upon linen or paper from itinerant physicians upon the streets. Debeaux found such a plaster, recommended against glandular inflammation, to be composed of resinous matter, fatty oil, and a large proportion of powdered mylabris. Some of the salves have been in use anterior to our era. Such are salves containing sulphur, sulphuret of calcium, or calomel and corrosive sublimate.

"*Conserves.*—Many vegetable substances used in Chinese medicine, such as ginger, galanga, zedoary, Japanese may flowers, young bamboo stems, sugar-cane, sweet and bitter oranges, etc., are conserved by dipping them several times in boiling syrup and drying them upon trays, by which treatment they become covered with a crust of sugar, and form very popular remedial agents.

"*Wine and Spirits.*—Grape wine is not used in Chinese pharmacy, but is supplanted by *cha-sin-kiow*, a vinous liquid obtained by fermentation from rice. Rye, barley, and maize are also used for this purpose, their flowers being mixed in large jugs with water, and fermentation incited by means of Kiou-tzé (*i. e.*, wineseed), which is really nothing further than yeast obtained as residuum in the vessels in which fermentation had previously taken place. Although the grape is cultivated in a number of the central provinces, wine from them is scarcely known. By the distillation of these fermented liquids their brandy is obtained, with which, among others, the following

"*Bitter Brandy* is made: Aloe, myrrh, olibanum, āā 12; curcuma, 2; they are powdered, mixed with 750 brandy, exposed in a close vessel to the sun for one month and decanted.

"*Infusions and Decoctions* are popular throughout China; wormwood, pennyroyal, elder flowers, pansies, jasmin, Japanese sophora, pæonia flowers, etc., being used for these.

"*Vegetable Juices* have been used by the Chinese physicians for centuries. Among these are the freshly expressed juices of wormwood, portulaca, radishes, and of Nelumbium speciosum.

"The most popular remedy among those of animal origin is a glue prepared from the hide of the black ass (*N'go-Kiao*). This glue must be prepared in a prescribed manner from the water of a celebrated well, in the neighborhood of *N'go-Hieu*, which is said to be in communication with a subterranean lake, and is by the government opened only from November to March. The glue (gelatin) is found in the markets in form of small tablets, upon which the name and residence of the manufacturer is stamped in gold letters. It is largely sophisticated by glue obtained from other sources."

An extensive list of medicinal agents of mineral, vegetable, and animal origin is included in the paper of the author above referred to, and the special uses and supposed medicinal properties are indicated. The list includes many curious and disgusting substances.

Among the most interesting papers extracted during the past year are those detailing the experiments of Buchheim upon the acrid substances of the Materia Medica. The experiments were made with a view to determine the principles to which the acridity of the drug is due, and have developed much that is new and valuable. Thus he has found that the active principles of euphorbium, mezereon, podophyllum, elaterium, and jalap are the anhydrides of certain acids, into which they are readily convertible ; generally by simple action of heat upon their solutions, and very readily by the action of alkalies. While the unchanged principle is soluble both in ether and in alcohol, the changed principle (acid) is either of difficult solubility or completely insoluble in ether ; thus explaining the association of two resinous principles of different solubilities in the drugs named. The acridity of capsicum is found to be due to capsicol, a brown-red, neutral, oily liquid, and finding a similar substance in grains of paradise, which the author calls paradisol, he believes that a similar substance will also be found in ginger-root. His results with Rhus toxicodendron throws new light upon the constitution of this remarkable plant, and differ widely from those obtained by previous experimenters. He finds the active principle not to be a volatile alkaloid, as supposed by Kittel, or a volatile acid, as believed by Maisch, but a substance similar, if not identical, with cardol, the active constituent of Anacardium occidentale. The substance to which the pungency of pimpinella is due is found by him to be very closely allied to the angelicin (the active principle of angelica root) of Buchner, and he suggests, that if comparative experiments be made with these and other acrid umbelliferous plants, very interesting scientific results will be obtained.

A very interesting paper has also been written by Professor George Dragendorff on the "Medicinal Agents employed in Turkestan," which is supplementary and complementary to his paper on the same subject written in 1872. The author identifies and gives the chemical analysis of over two hundred and thirty-two drugs employed in Turkestan, of which such portions as are of immediate interest to Materia Medica have been extracted and are embodied in this report.

An indication of the modern progress of chemical industry will be found in the immense production of sulphuric acid, no less than 800,000,000 kilos—a quantity which would fill a canal 2 metres deep, 10 metres wide, and 25 to 30 kilometres long—being, according to A. Gaudry, annually produced in Europe. Among the practical results of the last few years may be mentioned: The condensation of hydrochloric acid, liberated in alkali works; the improvements of Weldon and Deacon in the manufacture of chlorine; the extraction of potash, as a secondary product, in the manufacture of beet-root sugar; the recent improvements in producing paper pulp from wood; the revolving soda-furnace, etc., etc. Regarding the improvements in the manufacture of soda, R. Wachner (in Deutsche Industrie Zeitung, 1873) sums them up, since Leblanc's discovery, as follows: "Only six years ago the jury of the Paris International Exposition gave their opinion to the effect that Leblanc's soda process would not likely be superseded by any other. Now the so-called ammonia process, which depends upon the property of bicarbonate of ammonium to decompose strong solutions of chloride of sodium, is not only likely to be an active competitor, but will, in all probability, completely revolutionize its manufacture. The process was originally suggested by Harrison, Deyer, Grey, and Hemming in 1838; was improved upon by Schlœsing and Rolland in 1854; by Margueritte, De Sourdeval, and James Young up to 1867; and since then by Solvay, of Belgium; Henigmann, of Aix-la-Chapelle; and Gerstenhœfer, of Freiburg. Soda factories, which are to be worked by the improved ammonia process, are being erected in England, Hungary, Switzerland, Westphalia, Thuringia, Baden, etc. The details of the improved method have not been made public; suffice it to state that by the improvements the ammonia and part of the carbonic acid are again recovered, and that the only drawback to the process is the production of considerable quantities of chloride of calcium. The advantages, which fully compensate the loss of chlorine, consist in the freedom of the product from sulphur compounds; in the simplicity of the apparatus; in the great saving of fuel and labor, and in the quality of the soda;

not to speak of hygienic considerations, as no troublesome by-products are formed. The diploma of honor has been awarded to E. Solvay by the Jury of Award of the International Exposition at Vienna for his improvements in this process.

The highest award, "the diploma of honor," has also been conferred upon a number of exhibitors of various articles of importance to pharmacy, medicine, and dietetics. Dr. O. Liebreich, of Berlin, for the preparation and medicinal application of chloral-hydrate; the Government of the Netherlands, for the culture of cinchonas in Java; the Liebig's Extract of Meat Company of Antwerp, for their South American extract of meat; the Anglo-Swiss Condensed Milk Company in Switzerland, for their condensed milk; Dr. C. Gräbe, of Kœnigsberg, and Dr. Liebermann, of Berlin, for their discovery of the preparation of alizarin from coal tar; Gessert Brothers, of Elberfeld, for the preparation of alizarin; Th. Coupier, of France, and Lucius Meister, of Brüning, for the preparation of anilin colors without arsenic; Schaffner, of Aussig (Bohemia), for the production of sulphur; Schlœsing and Rolland, of Germany (and E. Solvay, above mentioned), for the preparation of soda from common salt; and Dr. A. Frank, of Stassfurt, for the manufacture of potassium salts and other chemical products.

PHARMACY.

APPARATUS, ETC.

A New Apparatus for Determining the Specific Gravity of Liquids is described, together with the manner of its use, by Dr. Herman Sprengel. The form of the instrument is shown in Fig. 1, and the manner of its use in Fig. 2. It consists of an elongated U-tube, the open ends of which terminate in two capillary tubes, which are bent at right angles in opposite directions. The shorter one of the capillary tubes is a good deal narrower (at least towards the end) than the longer one, the inner diameter of which is about ½ mm. The horizontal part of this wider tube is marked *near* the bend with a delicate line (*b*). This line and the extremity of the opposite capillary tube (*a*) are the marks which limit the volume of the liquid to be weighed. The filling of the instrument is easily effected by suction, provided that the little bulb apparatus (as represented in Fig. 2) has previously been attached to the *narrow* capillary tube by means of a perforated stopper; suction applied to the open end of the india-rubber tube will produce a partial vacuum in the apparatus, causing the liquid to enter the U-tube. After the U-tube has been filled it is detached from the bulb, placed into water of the standard temperature almost up to the bends in the capillary tubes, left there until it has assumed this temperature, and, after a careful adjustment of the volume, it is taken out, dried, and weighed. The author gives some further directions elucidating the method of using the instrument, and precautions to prevent errors, and illustrates his method by examples. Ph. Jour. Trans., August 2d, 1873, p. 85; from Jour. Chem. Soc.

FIG. 1.

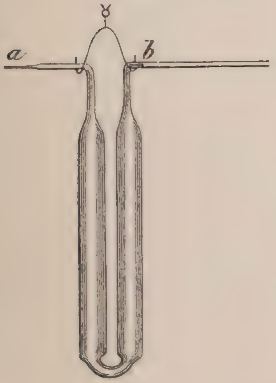


FIG. 2.

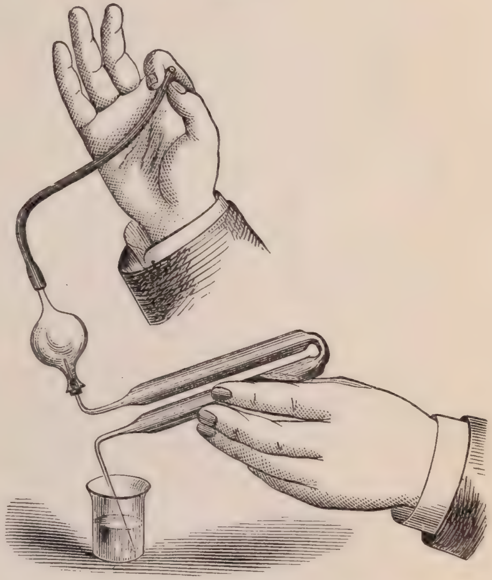
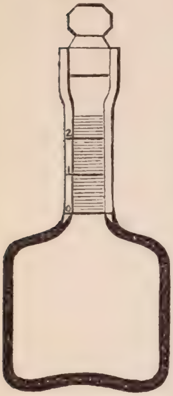
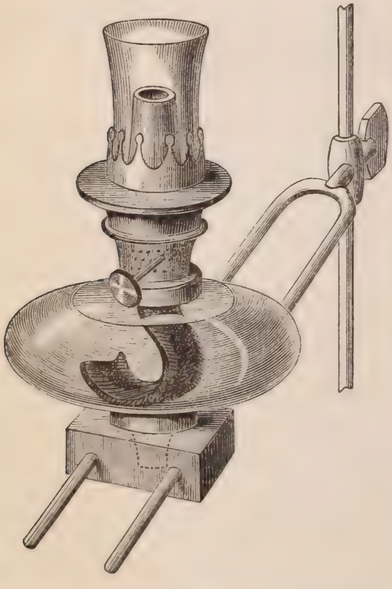


FIG. 3.



A Specific Gravity Bottle for Inflammable Liquids, which consists in a modification of that of Regnault, the narrow neck being graduated, instead of one mark being made on it, is recommended by A. Tribe, F. C. S., in a paper read before the British Association. The advantage was that an inflammable liquor, or one that gave dense or injurious fumes in the air, might be quickly poured in without observing the particular height in the neck till the stopper had been inserted. It also afforded the opportunity of bringing the liquor to a desired temperature after it was in the bottle. (See Fig. 3.) Chem. News, September 26th, 1873, p. 164.

FIG. 4.



A New Spirit-Lamp is proposed by Dr. F. Mohr as a substitute for the metallic, so-called Berzelius lamp. It is, in fact, nothing more than an ordinary good petroleum lamp, arranged as shown in the accompanying illustration (Fig. 4). The main objection to the Berzelius lamp is, that the alcohol receptacle being of metal, the quantity of alcohol consumed is not readily ascertained, and consequently the process may be interrupted at a moment when it is least convenient to replenish the supply. Besides, in the Berzelius lamps, as ordinarily constructed, the wick is too small, and if it has been charred a number of times, it will no longer reach to the bottom of the reservoir. In the proposed lamp the burner should be inclosed by a glass cylinder of at least 25 to 30 mm. internal diameter. The flame may be regulated with the utmost facility. Zeitschr. Anal. Chem., No. 3, 1873, p. 291–2.

A New Gas-burner.—Dr. R. Pribram has devised a new gas-burner, which has the advantage that it may be used as an ordinary "Bunsen's" burner, or as a rosette burner. It consists of a "Bunsen's" burner, so arranged that the admission of gas and air is properly regulated. It is surmounted by a top-piece of about 3 centimetres diameter, provided in the centre with an opening, which may be closed by turning a small disk. When this disk is open the burner serves the purpose of an ordinary "Bunsen's" burner, but when closed the mixed gas and air escapes through twelve circular openings of 2 mm. diameter provided at the side of the top-piece, and thus forms a rosette burner. (See Fig. 5.) Zeitschr. Analyt. Chem., 1873, No. 3, p. 300.

FIG. 5.

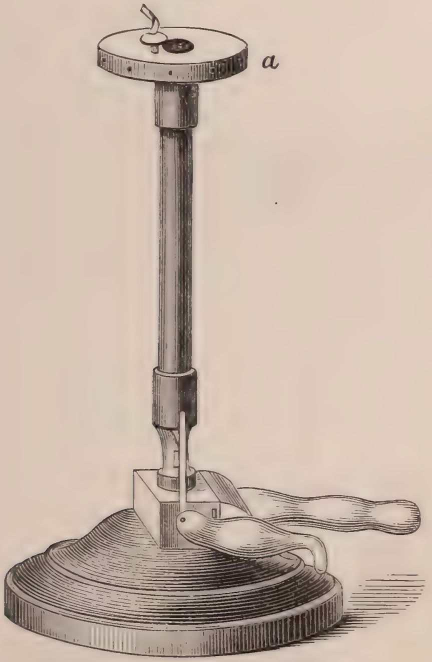
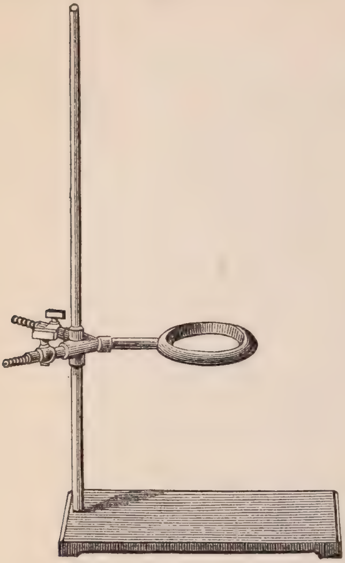
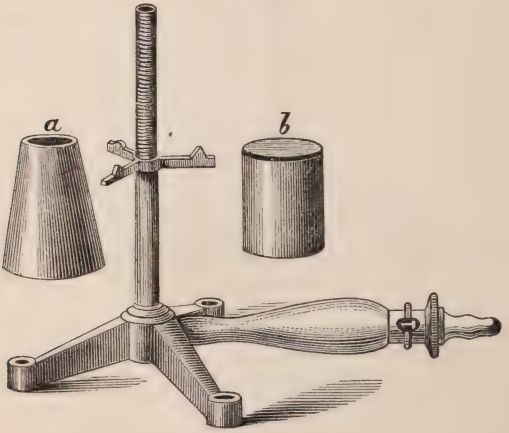


FIG. 6.



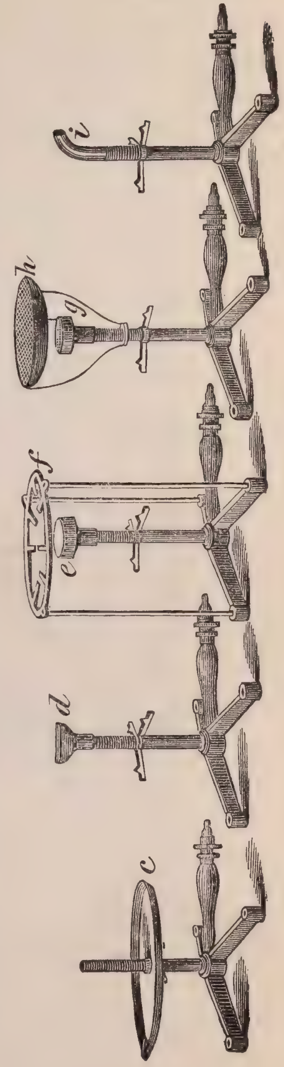
A New Gas-burner has also been devised by Prof. Wolcott Gibbs, which will not only find application to analytical experiment, but will be applied to pharmaceutical uses. It consists of a hollow metallic ring, which readily slides on a vertical rod, and is provided with two cocks, one for the admission of coal gas, the other for air (see Fig. 6). The ring is provided with a number of small openings, so arranged that the flames will concentrate towards the centre of the ring. The air is readily forced in either by an ordinary or pneumatic bellows arrangement. Zeitschr. Analyt. Chem., 1873, No. 3, p. 302; Am. Jour. Arts and Sc.

FIG. 7.



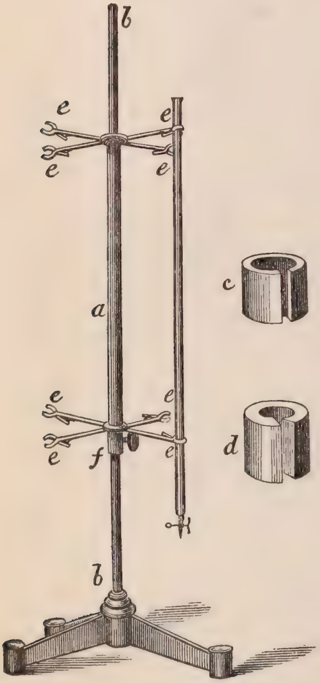
A Universal Burner has been devised by Robert Müncke, and is illustrated by Figures 7 and 8. The base is threepronged, of cast iron, is provided at the side with a handle-shaped tube which admits the gas (and air?), and which, by turning the larger ring, permits of the regulation of the flow of gas with such nicety that the smallest as well as largest flame that is desirable may be obtained. The burner-tube is provided with a screw-thread for attaching the various supports, burner, and other contrivance shown in the illustrations, Fig. 8. *a*, Fig. 7, is a conical chimney, open below and above; *b*, Fig. 7, is a cylindrical chimney closed above with wire netting; *c*, Fig. 8, is a porcelain plate to catch any substance that may fall upon it during the heating; *d* is a flat burner for heating glass tubes; *e* is a crown-burner, with openings at the sides; *f*, a tripod fitting into the prong of the base, and provided on top with a star-shaped ring; *g*, a sieve burner, its flat surface being pierced with a great number of minute holes; *h* is a support for wire netting, capsules, triangles, etc.; and *i* a bent extension of the burner, very useful for melting purposes, as it prevents the melted substance from dropping into the burner. The various uses to which this universal burner can be applied become apparent by the illustrations. Ph. Centralh. 1874, No. 12, p. 93–94.

FIG. 8.



General Apparatus Stand.—Dr. E. R. Squibb exhibited an apparatus stand at the Richmond meeting of the Association which, with great solidity, combines a general sphere of usefulness, being applicable as a retort-holder, burette-holder, funnel, percolator, and evaporating-dish support, etc. It is also provided with sand-baths, etc., and, in fact, is of almost universal application in the laboratory. It is illustrated and described fully in the Proceedings, 1873.

FIG. 9.

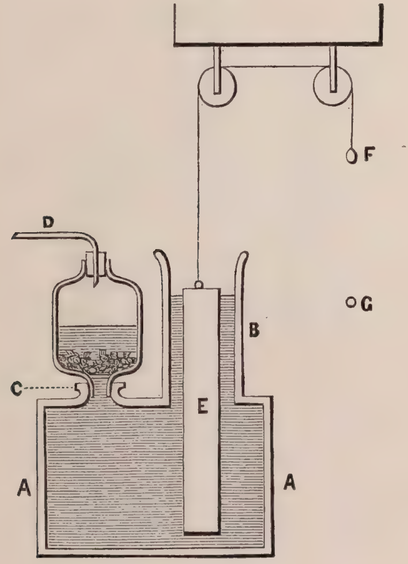


A New Burette Stand is recommended by Dr. R. Pribram, the construction of which is evidenced by the accompanying illustration (Fig. 9). An iron tube (*a*) slides accurately and freely over an upright rod of iron (*b b*). It is about one-half as long as the rod over which it slides, is provided with a screw at the lower end by which its position may be lowered or raised at pleasure, and at both ends is provided with four horizontal arms (*e*), which are of equal length, and are provided with spring-clamps which hold the burettes as shown in the illustration. The wooden rings (*c*) and (*d*), the inner diameter of which may vary in size, are used for the purpose of securing the burettes in a perfectly vertical position. The stand has the advantage that the burettes may be readily removed from the stand without removing the clamp. Zeitschr. Analyt. Chem., 1873, No. 3, p. 299.

Dr. E. R. Squibb has devised a new burette stand which, by its simplicity and convenience, recommends itself to those who pursue volumetric analysis. It is illustrated and described in the Proceedings of 1873.

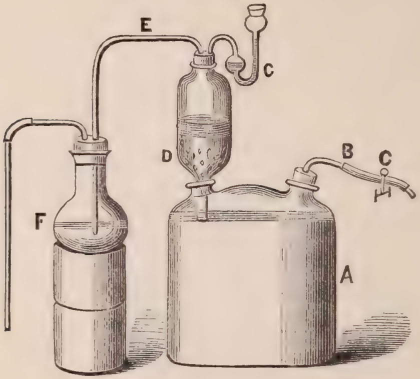
Improved Gas Generators.—At a meeting of the British Association Dr. C. J. Woodward, referring to various arrangements which had been devised for readily bringing in contact, or removing from each other the material required to generate a gas, explained two forms of apparatus he had made to overcome certain objections which he had experienced. The first, shown in section, Fig. 10, is intended for large supplies of gas,

FIG. 10.



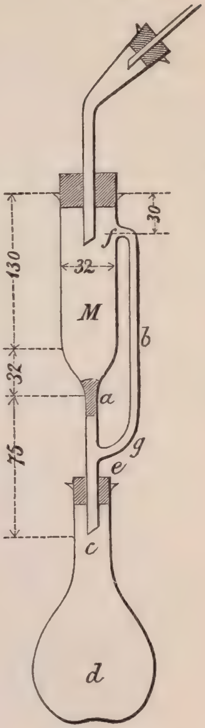
and consists of a circular stoneware vessel, A A, holding three or four gallons, and surmounted by a large cylindrical pipe, B. In the top of the vessel is a tubulure, C, to which is fitted a glass cylinder containing the granulated zinc or other gas-generating material. To the opening of the upper end of the glass cylinder is attached a cork, and the delivery tube, D. A plug, E, can be raised or lowered by means of a cord, which, passing over pulleys, terminates in a ring, F. It will readily be seen in what way the apparatus is used. As seen in the figure, the plug, E, is immersed in the acid, with which the stoneware jar is filled, and the liquid has risen by displacement into the glass cylindrical vessel coming in contact with the gas-generating material. When it is desired to stop the flow of gas, the plug, E, is raised, the ring, F, being slipped on the stud, G. The acid now retreats from the glass cylinder, and the gas-generating material is left dry. The second form, which is intended for small quantities of gas, is illustrated by Fig. 11. It consists of a Woulff's bottle, A, to one tubulure of which is fitted a cork carrying a glass tube and a piece of caoutchouc piping, B. The pipe, B, can be closed by the pinch-tap, C. To the other tubulure of the Woulff's bottle is fitted the adapter, D, in which is placed the gas-generating material. To the upper end of the adapter is fitted a cork and tube, E, serving for the escape of gas, which is washed at F, and then passes on for use. To use the apparatus the Woulff's bottle is charged with acid up to the level indicated in the figure. Then, on blowing air by the mouth by means of the tube B, the pinch-tap, C, being open, acid is forced into the adapter, D, and gas at once comes off. The pinch-tap, C, is now closed, and the compressed air in the Woulff's bottle keeps the acid in the adapter. By opening the pinch-tap, C, the acid returns into the Woulff's bottle, and the flow of gas ceases. A safety tube, G, is used to prevent the liquid from the wash-bottle being drawn over on stopping the supply of gas. Chem. News, Oct. 24th, 1873, p. 209–210.

Fig. 11.



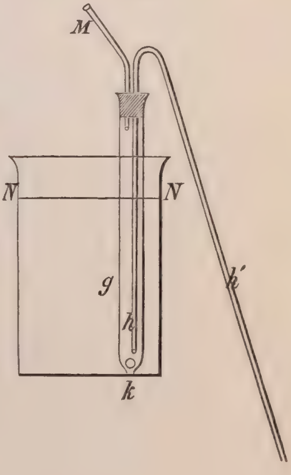
A New Displacer, which is, however, simply a modification of that proposed by O. Storch, is proposed by Zulkowski, and its construction is explained by the accompanying illustration (Fig. 12). The displacer (M) is provided with the tube (*b*), which serves for the passage of the vapor of the extracting liquid (ether, alcohol, benzole, petroleum ether, etc.) from the flask (*d*) into the part of the displacer above the substance to be extracted. The latter is properly packed upon the cotton stopper (*a*), moistened with the extracting liquid; the flask being filled with the latter to about one-quarter its capacity. Heat being applied to the flask, the extracting liquid is vaporized, passes into the upper part of the displacer, and from thence into the reversed condenser, where it is condensed and, flowing back upon the substance in the displacer, passes through and extracts it in the ordinary manner. Zeitschr. Anal. Chem., 1873, No. 3, p. 303.

FIG. 12.



A New Siphon, proposed by Jos. Sedlaczek, is illustrated by Fig. 13. A glass tube of 30–40 centimetres length and 2 centimetres diameter (*g*) is reduced to a narrow diameter at *k*; a glass marble is introduced and serves the purpose of a valve. The siphon (*h h*) and the mouth-piece (M) are then introduced air-tight by means of a cork; the siphon reaching down as far as possible without interfering with the proper action of the valve. The siphon is used by inserting it into the liquid and forcing air into it by means of the mouth-piece (M), by which the

FIG. 13.

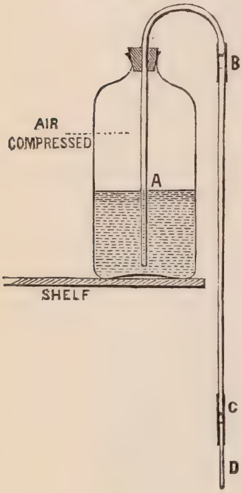


valve is closed, and the liquid forced through the tube (*h h*). Zeitschr. Anal. Chem., 1873, No. 3.

An Upright Condenser has been devised by Dr. E. R. Squibb, and is illustrated and described in the Proceedings of last year (1873). It is constructed after the manner of Liebig's condenser; is designed to occupy a perpendicular position; is provided with an extra condensing tube, by which it condenses any vapor remaining uncondensed in the main tube, and possesses other merits which will become obvious on consulting Dr. Squibb's paper.

A New Containing Vessel for reagents which are readily affected by exposure to atmospheric air, etc., has been devised by R. H. Ridout, and is illustrated by Fig. 14.

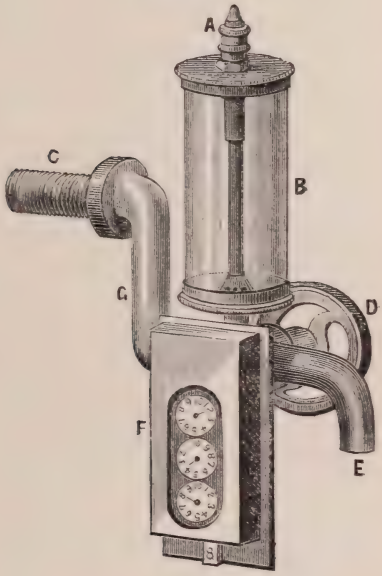
FIG. 14.



The bottles to contain the reagents are about two or more times the size of the bottles in which they are ordinarily contained. A is a bottle having a glass tube passing through a first-rate cork in the narrow neck, and reaching to within one-half inch of the bottom. The other end makes a complete arch, and is connected to the glass tube, B C, by an india-rubber junction. D is a fine glass jet, fixed also to B C by an india-rubber junction, the ends of the tubes being just far enough apart to allow a pinch-cock to be placed on the india-rubber tube. The reagent is placed in a wash-bottle, its jet being connected to the jet D by an india-rubber tube. A bladder is attached to the mouth-piece, and the liquid forced up C B into the bottle, thereby compressing the air in the bottle above the reagent. The pinch-cock being put up in C, the reagent is prevented escaping; and when it is opened the air on the surface of the liquid A will force it through the tubes and out of the jet D drop by drop, or in a rapid stream, as may be desired. The liquid never comes in contact with any air except that in the bottle, which may be either purified from harmful compounds, or another gas substituted having no action on the liquid. Chem. News, Jan. 2d, 1874, p. 3.

A Self-Registering Measuring Tap is represented by Fig. 15. By means of an arrangement, similar to that adopted in gasmeters, every discharge from the tap, whether it be in ounces or drachms, or any other fixed quantity, according to the size of the measuring-glass, is registered on the dial. A check is thus kept on the quantity drawn, and that which remains in the barrel or tank. The contrivance has been registered by Messrs. Dows, Clark & Co. (London ?). Ph. Jour. Trans., July 12th, 1873, p. 30.

FIG. 15.



A very simple Substitute for the Clamps, ordinarily used for closing burettes, is proposed by E. Mylins. It consists of a glass rod about 1 centimetre in length, which is the same calibre as the glass exit tube, and rounded at both ends. This is inserted in the rubber tube, between the exit tube and burette, thus closing the latter effectually; upon pressing the rubber tube on one side with the thumb and index finger, a crease is readily formed, which permits the flow, drop by drop, of the liquid contained in the burette. The idea seems to have been first applied by Bunsen. Archiv Pharm., Feb., 1874, p. 151.

Bending Glass Tubes.—The tube is filled with fine dried sand, closed at both ends, and heated in a Bunsen flame. It may then be bent in any direction, even doubled upon itself, without danger of destroying its calibre; the sand serving for the equal distribution of the pressure on the inner surface of the tube. A similar method is used for bending lead or copper tubes. Zeitschr. Œst. Apoth. Ver., 1874, No. 5, p. 85.

Metallic Caps, which are usually stated to be made of zinc, have been found by Dr. G. C. Wittstein to be really made of lead, to which a very small percentage of tin has been added. Such caps were examined by the author and found to contain the following percentages of lead: From a champagne bottle, 90.13 per cent.; from a liquor bottle, 91.33 per cent.; from a mustard jar, 92.4 per cent.; from a mineral-water bottle, 93.1 per cent.; from a beer bottle, 94.2 per cent.; from a beer bottle, 99.4 per cent.

Tin Foil, which had been used for wrapping cheese, has by the author also been found to contain a large percentage of lead. Ph. Centralhalle, 1873, No. 44, p. 373.

PROCESSES, ETC.

Percolation.—In connection with his paper on tincture of rhubarb (Amer. Jour. Pharm., July, 1873, p. 306), Mr. J. B. Moore offers some hints in regard to the prevention of deposits in the percolates and on the general management of the process of percolation, which deserve particular attention. The receiving vessel should be either perfectly dry, or should be rinsed with a portion of the menstruum with which the drug is to be extracted. The percolate should be agitated occasionally so as to dilute the first and more concentrated portions, otherwise, being often supersaturated, the first portion is prone to deposit. If a menstruum of different strength or character than that intended to exhaust the drug is employed to displace the portion retained by the drug, a quantity of the normal menstruum, in excess of the quantity of percolate desired, should be used, in order to prevent the admixture of any portion of the second menstruum, with the percolate obtained. Any violation of these rules, may cause, and often does cause deposits in the percolates on standing.

A Simple Contrivance for Filtering at Elevated Temperatures has been suggested by A. Horwarth, and successfully tried in the laboratory of Prof. Schneider, in Vienna. A soft lead pipe, about one centimetre in diameter, is closely coiled around a glass funnel, so that the windings remain in close contact; both ends of the pipe are sufficiently long, the upper end being used for admitting the vapors from a retort or flask, and the lower end being connected with a suitable receiver. By using liquids distilling at different temperatures, and passing their vapors through the coil, any desired temperature may be maintained in the funnel. Amer. Jour. Pharm., from Pharm. Centralhalle, 1874, No. 11.

Swedish Filtering-Paper.—Dr. Fr. Mohr agrees with Fresenius that Swedish filtering-paper possesses no advantage over the German filtering-papers, and that it is inferior to some varieties of the latter. Its texture is inferior; it possesses less cohesion, and, containing both clay and lime, it requires to be washed with acids, etc. Zeitschr. Anal. Ch., 1873, p. 148.

Glass-Wool.—W. Hildwein has had opportunity to examine the glass-wool of Jul. v. Brünfaut of Vienna, at the Vienna Exposition, and finds it to consist of exceedingly voluminous masses, composed of curled threads, about half a metre long and about the thickness of a fibre of raw silk. Its application to filtering purposes is obvious, and has already been alluded to in the report for 1873. Hager has procured it from Warmbruner, Quilitz & Co., of Berlin. Pharm. Centralhalle, 1873, No. 31, p. 271.

Reagent Papers.—Dr. Mohr recommends the use of reagent papers for a number of reactions, besides those in which litmus or similar papers are generally used. The advantages of such papers are numerous, as the use of the test-tube is avoided, and but small quantities of the substance under examination required for a qualitative indication. He prepares a number of such reagent papers, which are described in the following:

1. *For Acids and Alkalies.*

a. Litmus Paper.—The litmus is exhausted with strong alcohol; it is then extracted with water, and the infusion is applied to writing (sized) paper and allowed to dry. The dried paper is washed with distilled water to remove free alkali. *Red litmus* paper is prepared by dipping the blue paper into diluted sulphuric acid, and this, after drying, must be washed to remove excess of acid. In this way the most sensitive papers are prepared. For opaque or colored liquids, litmus is prepared in the same way as above, but substituting filtering for sized paper. The color indication is observed on that part of the paper, above the line of actual contact with the liquid, which has absorbed a portion of the fluid. Another practical idea is suggested by the author. It consists in pencilling alternate stripes, 10 to 12 mm. wide, upon blue litmus paper with dilute sulphuric acid, drying, and then washing. It is then cut in the centre of the stripes, and a test paper so obtained, which, when immersed in a liquid, will at one glance indicate either acid or alkali.

b. Turmeric Paper.—Turmeric root contains two yellow coloring matters, of which one is soluble in water, the other is resinous and soluble in alcohol. The one soluble in water is not sensitive to alkalies, and it is therefore advantageous to remove it by macerating the whole roots in rain-water, and repeating this until they are exhausted. The roots so washed are then dried, bruised finely, and exhausted with alcohol. The tincture so prepared is used for making the reagent paper from filtering-paper, which must be dried and kept in the dark.

Other papers are not necessary for acids or alkalies. A paper sized with starch, and saturated with a solution of 1 part iodate of potassium and 5 parts iodide of potassium, is quite sensitive to acids, but the reaction is not as rapid as with litmus.

2. *For Oxide of Iron* (*Salts*).—*Sulphocyanide of potassium paper* is prepared by saturating filtering-paper with a dilute solution of the salt, and drying. It keeps well in a portfolio between layers of paper. It is turned red-brown to yellow by solutions of persalt of iron, according to the dilution.

Ferrocyanide of potassium paper, prepared as above, is useful, not only for persalts of iron, but also for salts of copper.

3. *For Reducing Substances.*—Almost all writing papers are sized with starch, the presence of which is indicated by the blue stain produced by dilute solutions of iodine. If such paper is saturated with a solution of iodate of potassium in oxalic acid, and is allowed to dry, a reagent paper is produced for all substances that have a strong affinity for oxygen; such as sulphurous acid, hyposulphite of sodium, sulphuretted hydrogen, sulphocyanide of potassium, salts of protoxide of copper, iodide of potassium, ferrocyanide of potassium, etc. These act by reducing the iodic acid and liberating iodine, which is indicated by the starch contained in the paper.

4. *For Oxidizing Substances.*—Paper, sized with starch, is saturated with iodide of potassium and dried, by which it assumes a violet color. It is cut into strips of proper size, placed into a wide-mouthed glass-stoppered bottle, which is inverted and the sulphurous acid, produced by an ordinary sulphur match, is allowed to ascend into the bottle, which is then immediately closed. The paper is turned perfectly white, and is ready for use. Blue stains are produced upon this paper when brought in contact with Cl, Br, I, CrO_3, and chromate of the alkalies with free acid, chloride of iron and peroxide of iron salts, oxide of copper salts, nitrous acid, ozone, etc., etc.

5. *For Gaseous Ammonia.*—Paper saturated with nitrate

of protoxide of mercury (mercurous nitrate) and dried, assumes a gray to black color in contact with ammoniacal vapor; well washed red litmus paper answers the same purpose, however.

6. *For Sulphuretted Hydrogen and Sulphurets.—a.* Paper saturated with acetate of lead; or *b.* Coated with subcarbonate of bismuth; or *c.* Saturated with protochloride of cobalt. Black spots are produced upon the paper, provided there is not too much free acid in the solutions.

7. *For Metals that Produce with Sulphuretted Hydrogen Black Precipitates from Acid Solutions.*—Acetate of zinc is precipitated by sulphuretted hydrogen; the precipitate is washed and spread, in its moist condition, upon writing-paper. Upon drying, a reagent is obtained, which is a sulphuretted hydrogen that may be carried in the vest pocket. Any mineral acid will generate sulphuretted hydrogen, which immediately precipitates the metals contained in it.

The colorless papers in the above series are marked with the symbols or names of the substances they may contain. Zeitschr. An. Ch., 1873, No. 4, p. 368–372.

Transparent Paper is made by soaking paper in a composition made as follows: Linseed oil, boiled and bleached, 20 kilos; lead turnings, 1 kilo; oxide of zinc, 5 kilos; Venice turpentine, ½ kilo. The whole is mixed and boiled for eight hours; after cooling it is stirred, and the following ingredients added: White copal, 5 kilos; sandarac, ⅓ kilo. Chem. News, Oct. 24th, 1873, from Les Mondes, Oct. 2d, 1873.

Corks.—It is stated that in England old corks, which have been already used, are collected, and recut in such manner that it is difficult to distinguish them from new corks. These corks have found ready demand by ink bottlers, but latterly have also been in demand, on account of their cheapness, for purposes for which their use is less justifiable. Ph. Centralhalle, 1873, No. 30, p. 262, from Der Techniker.

A Superior Paste is made, according to Fr. Sieburger, by macerating 4 parts glue in 15 parts water for several hours, then heating gently until solution is effected, diluting with

65 parts boiling water, and adding to a boiling solution of 30 parts of starch in 200 parts of water. The paste so prepared keeps well in close vessels if a little carbolic acid is added to it, and possesses extraordinary adhesive properties (see also Mucilage of Gum Arabic in this report). Ph. Centralhalle, 1873, No. 26, p. 223.

A Cement for Fastening Metallic Objects on Glass is prepared, according to R. Franke, by intimately mixing 2 parts finely powdered litharge and 1 part dry white lead, and forming a thick pasty mass by means of boiled linseed oil and copal varnish; the latter in proportion of 1 to 3 of oil. The cement dries rapidly, and becomes exceedingly tough. Ph. Centralhalle, No. 46, 1873, p. 389; Polyt. Notizbl.

Freezing Mixtures.—It seems from Rüdorff's experiments that *sulphocyanide of potassium*, when dissolved in water, reduces the temperature to a greater degree than any other known saline compound, even nitrate of ammonium. If 500 grammes of the finely powdered salt is dissolved, by the aid of continuous stirring with a thermometer, in 400 c.c. of water at a temperature of +10° C. (= +50° F.), the temperature sinks rapidly to —23° C. (= —94° F.). If the solution is effected by stirring with a beaker containing water, the water becomes solid in about two minutes. The author also points out a source of error in making freezing mixtures, which results from inattention to the relative amount of salt and solvent used. A certain quantity of each being necessary to effect solution at a certain temperature, the use of an excess of either causes a loss in refrigerating power, by its reduction to the common temperature. To this circumstance the author attributes the deviation in the results of different experimenters. Ph. Centralhalle, 1874, No. 3, p. 24.

Lister's Bandage-gauze is, according to I. Müller, readily prepared, similarly to wax paper, by thoroughly washing and then drying fine gauze, cutting in pieces of the required size, and coating, upon a heated sheet of tinned iron, with a previously melted mass, composed of 200 parts yellow wax, 50 parts oil (ol. lini ?), and 50 parts carbolic acid. The tinned iron should be as hot as it is possible to heat it on a water-bath, by which a waste of the impregnating mass and uniformity is insured. Arch. Ph., 1873, December, p. 535.

Varnish for Paper Labels on Shop Bottles.—W. Danckwortt recommends the following formula as reliable: ℞. Mastiches, 4 parts; sandarac, 2 parts; camphor, 1 part; alcohol absol., 8 parts; ol. terebinth. rect., 4 parts. The paper is first sized by means of collodion or a solution of gum arabic (1 : 5), and three coats of the varnish are then applied, allowing each coat to dry before applying the next. It dries rapidly. Arch. Ph., April, 1874, pp. 337, 338.

Furniture Polish.—An excellent polish for wooden furniture is obtained, according to Niedlig, if 8 parts white wax, 2 parts resin, and ½ part Venice turpentine are melted by gentle heat, and 6 parts of oil of turpentine are then stirred in. After standing twenty-four hours a soft mass, of the consistence of butter, is formed, a small quantity of which is rubbed upon the furniture (previously washed with soap) with a woollen rag; after a quarter to half an hour the furniture is well rubbed with a clean rag, when a handsome polish results. Zeitschr. Œst. Ap. Ver.

Vanadium Ink.—According to R. Böttger, certain iron ores contain vanadium in such quantities as to render its extraction profitable for the purpose of making vanadate of ammonium (see Vanadium in this report), which serves an excellent purpose for making a superior black writing fluid by the following method: 1 part of pyrogallic acid, 3 parts finely powdered gum arabic, and 3 parts neutral vanadate of ammonium are triturated together, and the mixture is dissolved in an appropriate quantity of rain-water; forming, in a short time, a deep black and ready flowing writing fluid. Ph. Centralhalle, 1873, No. 39, p. 331.

Böttger's Portable Ink is prepared by saturating several sheets of paper with anilin black, and pressing them together into a compact and portable mass. For writing it is merely necessary to tear off a piece of this paper and steep it in a little water. Chem. News, Nov. 21st, 1873, from Bull. Soc. d'Encouragement pour l'Industrie, Nov., 1873.

A Red Ink, which withstands the action of the most powerful chemical reagents, is prepared, according to Prof. Böttger, by triturating carmine with a solution of silicate of soda, and then adding so much of silicate of soda solution to give it the consistence of a good flowing ink. It dries rapidly and flows readily from the pen. The vessel in which it is kept should be carefully closed when not in use. N. Rep. Ph., No. 1, 1874, p. 49.

Stamping Ink.—A superior article is prepared, according to J. Müller, by dissolving 1 part of crystallized, so-called, reddish-violet anilin in 30 parts of alcohol, and adding 30 parts of glycerin. So prepared, it resembles very closely the English article of European commerce, and is used in the same manner. Arch. Ph., 1873, Dec., p. 536.

Iodo-bromide Calcium Compound, an American production, has been analyzed by Dr. Richard Godeffroy, of Vienna, who finds it to be nothing else than a *solution of chloride of aluminium in water*, the other salts found being simply contaminations of the chloride of aluminium and of the water employed for solution. One hundred parts of this "new alterative compound" contains, 1, traces of bromide of sodium, of iodide of sodium, of nitrate of potassium, of phosphate of sodium, of a manganese, and of an iron salt; 2, 2.084 per cent. of chloride of calcium; 3, 16.948 per cent. of chloride of aluminium; 4, 0.268 per cent. of chloride of magnesium; 5, 2.668 per cent. of chloride of sodium; 6, 0.184 per cent. of sulphate of sodium; and 7, 1.824 per cent. of silicate of sodium; making a total of 22.976 per cent. of saline constituents. The author supposes that it is made from chloralum. Zeitschr. Œst. Ap. Ver., No. 7, pp. 117–119.

Kurolokino, an Abyssinian remedy against rheumatism, has been examined by Dr. Carl von Schroff, Jr., who finds it to be a mixture of various vegetable substances—leaves, stems, flowers, fruits, and barks; the chief components being leaves and stems. Among the components the author has determined the fruits of Ricinus—seed and capsules—the bark of Musenna, and the flowers of various Compositæ. Therapeutic experiments prove it to be worthless as an anti-rheumatic remedy. N. Rep. Ph., No. 2, 1874, pp. 106–111.

Anti-neuralgic Snuff.—Dr. Scriffignano recommends a snuff which he has prescribed with decided success in cases of facial neuralgia, the composition of which is as follows: Citrate of quinia, 10 grains; tobacco (snuff), 15 grains. Med. News, Dec., 1873, p. 192, from Lancet, July, 1873.

Red Wafers, examined by C. Bernhart, were found to contain, on an average, 9 per cent. of minium (Pb_3O_4), showing them to be quite poisonous. The experiments were made with 4.0 grammes of the wafers, which were incinerated in a porcelain crucible by the flame of an ordinary gas-burner, and left a yellowish ash, which was almost completely soluble in nitric acid. From the solution so obtained, the lead was precipitated and determined as sulphate. N. Rep. Ph., 1873, No. 7, p. 394.

Red Fire, made by mixing 1 part of shellac and 4 parts of anhydrous nitrate of strontia, possesses, according to Böttger, the advantage that, while it produces a beautiful red flame, it burns comparatively slow, and steadily, and all danger of spontaneous combustion is avoided. The mixture may be obtained in a fine powdered condition by mixing the ingredients in a coarsely divided state, heating to the melting-point of the shellac, and allowing the partly melted mass to cool, when it may be powdered as fine as is desirable. N. Rep. Ph., 1873, No. 10, p. 630.

CAUTERIES.

Iodine Caustic is prepared by Rieseberg by dissolving four grains of iodine in eight grains of glycerin. It is used in lupus by applying it once every other day, and covering the parts with gutta percha. This treatment is continued for several weeks. Am. J. Ph.; from Journ. de Pharm. et de Chim., Feb., 1874, 140.

CERATES AND OINTMENTS.

Ung. Benzoini.—The complaint made against the irritating character of the benzoated ointment of the Pharmacopœia, is met by Mr. H. M. Wilder by the suggestion that the alcohol be entirely evaporated after the addition of the tincture of benzoin to the melted lard, then straining, and stirring occasionally while cooling. A. J. Ph., Sept., 1873, p. 391.

Cucumber Ointment.—The late Prof. William Procter, Jr., in a paper read before the Association, at the meeting in Richmond, recommends the preparation of this ointment from cucumber oil, which is, in its turn, prepared by agitating oil of sweet almonds with grated cucumbers. See Proceedings of this Association, 1873.

Paraffin Ointment is recommended as a substitute for *cosmoline* (a commercial product of petroleum, so called) by Dr. A. W. Miller, and is prepared by melting one part of paraffin and mixing it with three parts of the so-called neutral oil of commerce, of a gravity of 32° to 33°, and which has been deodorized by filtering through animal charcoal. The product has about the consistence of the so-called cosmoline, melts at 95° F., but has a little more odor. A. J. Ph., Dec., 1873, p. 535.

Since writing the above, the author has succeeded to obtain a very heavy, gelatinous paraffin oil, which he believes to be the identical source of at least one variety of cosmoline. By boiling this oil for some time with a large excess of water, a tasteless and inodorous product was obtained, which, when further purified by filtering while hot through prepared animal charcoal, resembles ordinary cosmoline very closely, having a similar color, consistence, and melting-point, being quite inodorous and bland to the taste. Ibid., Jan., 1874, pp. 1–4.

Benzoinated Oxide of Zinc Ointment is prepared readily and expeditiously by Mr. Oliver Jester by heating 30 troy ounces of lard, to which 5 fluid drachms of tincture of benzoin have been added, to the boiling-point, and then stirring in 5 troy ounces of oxide of zinc, previously reduced with a spatula in a sheet of rough brown paper until it passes through a No. 60 sieve. The ointment is then stirred until cold. A. J. Ph., Jan., 1874, p. 9.

Ung. Calaminaris.—Th. Rosenbladt, in view of the impurity and variability of commercial calamine (see Calamine in this report), proposes as a substitute a mixture of 1 part of red oxide of iron and 20 parts of carbonate of zinc, which corresponds very closely to the composition expected by the Pharm. Rossic., for calamine, and makes a handsome ointment. Ph. Zeitschr. Rus., 1873, No. 19, p. 577.

Mercurial Ointment.—Experiments made by Magnes-Lahens convince him that the view so generally entertained that certain fats possess superior extinguishing qualities, on account of their chemical composites, is erroneous, and that such superiority is attributable to their consistence only. He found that fats that are liquid at ordinary temperatures enable the reduction of mercury rapidly and perfectly, and that this property is assumed by fats, that are solid at ordinary temperatures, when they are brought to a liquid condition by heat; while in their solid condition the latter extinguish mercury with difficulty only. While the preparations made with *liquid fats* will keep perfectly well, however, those made with *liquefied fats* do not keep, as upon cooling the mass becomes innumerably fissured, and the mercury again assumes globular form. Supported by these observations the author suggests that the mercury be partly extinguished with about 2 per cent. of oil of sweet almonds, for which, when operating upon 1000 grammes mercury, fifteen minutes will suffice; then adding about 20 per cent. of melted lard, and triturating until complete extinguishment, for which about one hour will suffice generally. The remainder of the fat is then incorporated. The author suggests the use of balsam of Peru, as an addition to the oil of almonds, instead of using benzoated lard to make the preparation of the Codex. Arch. Ph., Sept., 1873, p. 276; Jour. de Ph. et de Chim., 17.

Ung. Hydrargyri Nitratis.—The following formula, in which groundnut oil is substituted for olive oil and lard, is recommended by Falières, as preferable to the formula of the Codex:

Dissolve 5 parts mercury in 10 parts nitric acid (sp. gr. 1.42), without the aid of heat; pour the solution into the oil, agitating from time to time with a glass or earthenware spatula. After two or three hours, according to the quantity operated upon, and at a temperature of about 20° C. (= 68° F.), the mixture begins to take a milky consistence, which lasts for about an hour, then thickens to that of a soft butter. This latter stage lasts at least two hours, during any portion of which time it may be poured out. The mass spreads with perfect regularity in a paper mould, the thickness of the layer is uniform, and there is no separation between the oily and mercurial elements. After twenty-four hours it has the consistence of cacao-butter in summer, and reaches its maximum consistence in two or three days after. Compared with the preparation of the Codex the ointment has greater cohesion, is not friable, and is much better adapted for friction, as it melts and spreads upon the skin with greater facility. Ph. Jour. Trans., June 28th, 1874, from Bull. des Trav. de la Soc. de Pharm. de Bordeaux.

Cacao Cream is prepared by T. S. Glenn as follows: Melt 16 ounces of oleum theobromæ, and mix with 96 ounces of ol. ricini, previously warmed; then add to the mixture a solution of ol. bergami, ʒvj; ol. limonis, ℥iss.; ol. citronellæ, ʒiss.; ol. lavandulæ, ʒiv, in spiritus coloniensis, 95 per cent., ℥lxiv; and after thorough admixture fill in bottles of suitable size. An elegant hair dressing is formed. In very cold weather it becomes quite hard, but a little heat soon renders it fluid. A. J. Ph., Jan., 1874, p. 8.

COLLODIONS.

Collodium Cotton, perfectly white and completely soluble in ether, in mixture of ether and alcohol, and in glacial acetic acid, is prepared, according to Mitchell, as follows: 2 parts of cotton are boiled in a solution of 1 part of carbonate of potassium in 100 parts of water for two hours, making up the original measure of water as fast as it evaporates; after which it is washed and dried. 7 parts of cotton, so prepared, is immersed in a mixture of 4 parts of nitric acid, sp. gr. 1.42, which has been saturated with nitrous acid vapor, and 4 parts of sulphuric acid, sp. gr. 1.84, after the temperature of the mixture has been reduced to 27° C. (=80.6° F.). The cotton is allowed to remain in this mixture, in a cool place, for four days; is then well washed and dried. Ph. Centralhalle, 1873, No. 31, p. 267, from Amer. Jour. Phar., 1872, p. 241.

CONFECTIONS.

Electuary of Caoutchouc is prepared, according to Dr. T. R. Varick, by mixing together 2 ounces of solution of caoutchouc (see Solutions in this report), 1½ ounce of white sugar, and 2½ ounces of strained honey. The mixture shall be of opaque-yellow color, and thick enough to run very slowly. It contains about 2 grains of caoutchouc in a teaspoonful. Chem. and Drug., Feb., 1874, p. 48; from Lond. Med. Rec. and New York Med. Rec.

DISTILLED AND MEDICATED WATERS.

Medicated Waters.—As a substitute for carbonate of magnesium, in preparing medicated waters, Mr. James Ruan recommends to use pulp of chemically pure filtering-paper, and states that the aromatic waters may so be prepared of equal strength to that when the process of the Pharmacopœia is strictly followed. The following is illustrative of the process recommended:

Take of oil of peppermint, fʒss.; chemically pure filtering-paper, ʒj; distilled water, Oij. Cut the paper into small pieces; beat it up in a mortar with f℥j of water until reduced to a pulpy consistence; then add the oil and triturate until it is incorporated; add 15 ounces more of water, transfer to a suitable bottle, and rinse out the mortar with the remainder of the water; shake well, and filter. A. J. Ph., April, 1874, p. 188.

Camphor Water.—Mr. Franklin T. Hartzell regards the officinal process for camphor water defective, and states that when the camphor is rubbed to a very fine powder by means of ether, instead of forming a pasty mass with alcohol, and then incorporating with magnesia followed by water, an unexceptionable camphor water is obtained. The author advises the additional precaution to rub the pasty mass, obtained by triturating the mixture of camphor and magnesia, with a portion of the water, through a funnel-sieve, so as to remove all lumpy particles. A. J. Ph., May, 1874, p. 233.

Cinnamon Water.—Mr. Edmund Backhaus states that when carbonic acid gas has passed through freshly prepared cinnamon water the yellow color is removed, and the water will keep unchanged for a long time. The author ascribes the deposit formed in cinnamon water, prepared according to the United States Pharmacopœia, to cinnamic acid. A. J. Ph., March, 1874, p. 110.

Mr. F. W. Reinhold, Jr., finds that cinnamon water, prepared according to the officinal process, with carbonate of magnesium, is of entirely different composition to the cinnamon water made by maceration. In the former the cinnamic acid is completely removed by the magnesia, while in the latter the constituents of oil of cinnamon are contained unchanged. Water prepared by the latter method is colorless, while it is well known that the officinal cinnamon water is of a yellowish tint. This tint the author ascribes to a change which the oil has undergone by the action of the carbonate of magnesium. He also describes certain other differences between the two waters, and the method of chemically determining the difference in their constitution. The Pharm., Oct., 1873, p. 325.

(If the removal of cinnamic acid from the oil of cinnamon is the only action of the carbonate of magnesium, its use would seem to be advantageous rather than otherwise, since cinnamic acid is not a normal constituent of the oil, but is formed by its exposure. If the action is, however, more extended, as seems to be the author's inference, it would be interesting to investigate the subject farther.—C. L. D.)

Bitter Almond Water.—A. Koster makes some practical remarks upon the preparation of bitter almond water, with special reference to the direction of the Pharm. Germ. The author draws attention to the economy of subjecting the residue of the first distillation to a second distillation, by which a distillate is obtained which, containing considerable quantities of oil of bitter almonds (resp. hydrocyanic acid), is available for reducing the first strong distillate to the strength required by the Pharmacopœia ($\frac{1}{10}$th of one per cent.). The yield is thus nearly doubled.

The determination of the strength of the distillates is made by titration, and the method is based upon the formation of the soluble double cyanide of silver and potassium ($2CyH+2KO+AgONO_5 2HO+KONO_5+KCyAgCy$). It is well known that as soon as more nitrate of silver solution is added than is the proportion of 1 equivalent to 2 equivalents of CyH, a permanent precipitate of cyanide of silver is produced. The titration is conducted by adding to a portion of the CyH containing fluid a slight excess of caustic potassa and a little chloride of sodium, and then allowing a titrated solution of nitrate of silver to flow in until permanent turbidity is produced. The author prepares his silver solution of such strength that 100.0 grammes corresponds to the quantity of CyH that should be contained in 100.0 grammes of bitter almond water. He uses of the latter 10.0 grammes; adds to it 0.3 gramme hydrate of potassium and 0.2 gramme chloride of sodium, each dissolved in 10.0 of water, and then allows the titrated silver solution to flow in. For convenience he keeps on hand solutions of KOHO, 3.0 grammes in 100 grammes of water, and of NaCl, 2.0 grammes in 100 grammes of water. Arch. Pharm., 1873, pp. 510–12.

Cherry Laurel Water.—The experiments of Leger show the extreme variability of cherry laurel water, according as it is prepared at different periods of the year; they also show that the water does not remain long unaltered. The author distilled each month 1 kilogramme of leaves with sufficient water to 1500 grammes of product (Codex); the various distillates containing all the essence and acid were immediately titrated. The following table indicates the results obtained immediately after the preparation of the waters, and six months thereafter.

	First Titration.		Second Titration, after 6 months.	
January, 1871,	76	milligrammes.	68	milligrammes.
February,	96	"	80	"
March,	100	"	86	"
April, old leaves,	76	"	68	"
April, buds,	100	"	—	"
May, old leaves,	44	"	—	"
May, new leaves,	110	"	108	"
June, old and new leaves,	84	"	82	"
July,	125	"	118	"
August,	116	"	110	"
September,	110	"	110	"
October,	106	"	98	"
November,	100	"	92	"
December,	66	"	50	"

The loss is much more considerable when the distilled water is kept in bottles stopped with corks and not full. In order to ascertain these alterations, water distilled in February, 1871, and then containing 96 milligrammes of acid, was examined during fifteen consecutive months with the following results:

1st	month,	86	milligrammes.	9th	month,	74	milligrammes.
2d	"	84	"	10th	"	72	"
3d	"	80	"	11th	"	72	"
4th	"	80	"	12th	"	72	"
5th	"	80	"	13th	"	72	"
6th	"	76	"	14th	"	72	"
7th	"	74	"	15th	"	72	"
8th	"	74	"				

These figures show that from water kept in corked and only partially filled bottles the loss was at first very rapid, and afterwards became very slow, the strength remaining at 72 milligrammes during six months.

The author also draws attention to the circumstance that the water not only contains prussic acid in various proportions, but also volatile oil, which is a powerful poison, and of which the Codex takes no account. Pharm. Jour. Trans., June 7th, 1873, p. 971, from Rep. de Pharmacie.

M. Luton prefers distilled cherry laurel water to any other vehicle for narcotic hypodermic injections, such as morphia and atropia, as it prevents the mouldiness of the solution better than other distilled waters, and does not irritate the tissues any more than common distilled water. Med. News, Nov., 1873, p. 371; La Tribune Medicale, Sept., 1873.

Tar Water.—L. Pommier prepares a concentrated tar water by macerating in a covered vessel for eight days a mixture consisting of 10 parts each of Norwegian tar and ammonia water and of 100 parts of water; the mixture is then boiled, to expel excess of ammonia, then cooled and filtered. Thus prepared it has a mild alkaline reaction to litmus, and may be diluted as required. Am. Jour. Ph., from L'Union Pharm., Sept., 1873.

Artificial Mineral Water.—Mr. Rother publishes in the Pharmacist, August, 1873, pp. 328–332, formulæ for preparing the following artificial mineral waters: Kissingen (Racoczy), Congress, Vichy (Grand Grille), Selters, Bitter Water (Friedrichshall), Pyrmont (Trinkquelle).

In the same number of the Pharmacist, Mr. Judson S. Jacobus offers some practical hints on the management and preparation of soda water and soda water syrups.

ELIXIRS.

This Association adopted at the Richmond meeting formulæ for the preparation of the various elixirs now in use, for which see Proceedings, 1873.

Simple Elixir.—Prof. J. P. Remington recommends the following formula for a simple elixir, which closely resembles curaçoa cordial: Take of aqua aurantii (made from fresh oil of orange in the usual manner in the proportion of ʒij of oil to the pint), f℥iss.; simple syrup, f℥iss.; cologne spirits, f℥j; spts. vini gallici (opt.), f℥ss. Mix. Am. Jour. Pharm., Dec., 1873, p. 534.

Elixir of Gentian with Chloride of Iron.—Prof. J. P. Remington proposes the following formula: Take of new tincture of chloride of iron (see Tinctures in this report), 6 fluid drachms; tincture of cardamom, ½ fluid ounce; fluid extract of gentian, 3 fluid drachms; alcohol, 2 fluid ounces; oil of cinnamon (true), 1 drop; oil of coriander (fresh), 1 drop; oil of anise, 1 drop; oil of orange, 3 drops; syrup, 3 fluid ounces; water, sufficient to make 16 fluid ounces. Dissolve the oils in the alcohol, and having mixed the other ingredients, incorporate all thoroughly, adding sufficient water to make one pint, and filter. Am. Jour. Pharm., Sept., 1873, p. 388.

Elixir of Pancreatin is suggested by Mr. R. V. Mattison, and is prepared as follows: Take of pancreas, No. 6; acid hydrochlor., f℥iv; glycerin, q. s.; water, cong. iss. Macerate the dissected pancreas for three days in a mixture of the water, the acid, and 2½ pints of glycerin; then separate the liquid, strain, and add fʒiiss. oil of orange and a sufficient quantity of glycerin to make the liquor measure 2½ gallons; it is then filtered, and forms a sweet acidulous liquid, one fluid drachm of which will readily emulsify half a fluid ounce of cod-liver oil. Am. Jour. Pharm., Dec., 1873, p. 533.

EMULSIONS AND MIXTURES.

Emulsion of Cod-liver Oil is recommended to be prepared, as follows, by Mr. W. M. Rice, Jr., who states that it forms an emulsion which is preferable to those made by the formulæ heretofore offered: Dissolve ʒj tragacanth and ʒiv sugar in f℥viij of water, and strain the solution; add to this gtt. 60 oil of Gaultheria, gtt. 50 oil of sassafras and gtt. 10 oil of bitter almonds, then thoroughly incorporate f℥viij of cod-liver oil. An elegant emulsion results, which is not too thick, contains 50 per cent. of oil, and is rather pleasant to taste and smell. Amer. Jour. Pharm., Dec., 1873, p. 530.

The following formula, devised by Mr. Hassard of Philadelphia, is recommended by Prof. E. S. Wayne, is said to be pleasant to take, and forms a permanent and uniform emulsion, which keeps for at least a month in summer, and for a longer time in winter. Place the contents of four eggs in a suitable vessel, pour over them sufficient lemon juice to cover them (?), and let the whole remain twenty-four or forty-eight hours. Then pass the whole through a strainer, and add, with agitation, an equal volume of each of the following, in the order given: Honey, cod-liver oil, and brandy or whisky. Flavor with oil of wintergreen or bitter almonds. Amer. Jour. Pharm., Oct., 1873, p. 471.

Pancreatic Emulsion of Cod-liver Oil.—The following formula is proposed by Mr. R. V. Mattison. Take of saccharated pancreatin (prepared according to the author's method—see Sacch. Pancreatin in this report), ℥j; water, f℥iv; sugar, ℥vij; cod-liver oil, Oiss.; oil of wintergreen, gtt. 20; oil of bitter almonds, gtt. 5. With the sacch. pancreatin, sugar, and water form a thick syrup; to this add the oils and mix by agitation. An emulsion is readily formed, which is, in the author's opinion, preferable to the thick mucilaginous emulsions, made with gum arabic or tragacanth. It separates on standing, but is readily mixed again on agitating.

If it is desirable to have the emulsion white, the author recommends the substitution of a little lime-water for an equivalent quantity of water. Amer. Jour. Pharm., Feb., 1874, p. 53.

Pancreatic Emulsions of Solid Fats.—Mr. Richard V. Mattison, in continuation of his researches on Pancreatin, has devised a method for making a pancreatic emulsion of solid fats. The process consists in intimately mixing 100 parts of fresh pigs' pancreas, properly reduced in a mincing machine, with 80 parts of purified lard and 48 parts of water, until a perfect emulsion is formed. The emulsion is then subjected to powerful expression in a strong twilled bag, by which the emulsion is separated from the membranous tissue of the pancreas. The expressed liquid is shaken with 250 to 275 parts of ether, when, upon resting, two strata are formed of which the upper is an ethereal solution of the pancreatized fat. The ether is carefully distilled off from this, and this, the author states, is the most delicate part of the operation, since too high a temperature will decompose the emulsion, and towards the last the ether adheres very tenaciously. When all the odor of ether has disappeared, the pancreatized fat is diluted with 1½ parts of water and ½ part of alcohol, both being added very carefully, and it is then flavored with oil of cloves. The emulsion so prepared should have an acid reaction, and should not separate on standing. Any quantity of water may be added to this, without disturbing its appearance of an emulsion. Amer. Jour. Pharm., March, 1874, pp. 106–110.

Mixtures of Copaiva Resin.—Mr. A. W. Gerrard proposes the following mixture, as the best method of dispensing copaiva resin, to which Dr. Samuel Wilks has lately drawn attention as possessing therapeutic advantages over the balsam. Take of resin of copaiba, 15 grains; compound powder of almonds, 30 grains; water sufficient to make 1 ounce. Rub the resin with the powder until well incorporated; then add the water after the manner of forming an emulsion. A cream-colored emulsion is formed, having but a faint odor of copaiba, which may be removed by the addition of compound tincture of lavender. The formula is not liable to the objections of the separation of the resin on standing, as is the result when the mixture used in Guy's Hospital, London, is allowed to stand a day or two. In fact the author's experiment was made with a view to obviate that objection. The formula of the Guy's Hospital mixture is as follows: Take of resin of copaiba, 180 grains; rectified spirit, 5 drachms; spirit of chloroform, 1 drachm; mucilage of acacia, 2 ounces; water to 12 ounces. Mix according to art. Pharm. Jour. Trans., July 26th, 1873, p. 63.

Castor Oil Mixture.—Mr. E. Gregory recommends the following as a mixture well adapted for the administration of castor oil to adults, and which he considers preferable to a regular emulsion, because not so thick. It does not answer as well for children. Shake well together ol. ricini ℥j, mucilag. acaciæ ʒij, and add syrup. simpl. ʒij, spir. menth. pip. q. s., and water q. s. to make ℥ij.

Still better results are obtained from the following formula: Ol. ricini ℥j, ol. anisi gtt. x, chloroform gtt. x; shake well together, add mucilag. acaciæ ℥ss., again shake, and with water make 2 ounces. It does not separate as readily as the first formula. A. J. Ph., Nov., 1873, p. 487; from Can. Ph. Jour., Sept., 1873.

Mistura Assafœtidæ.—Mr. David Ackermann, in the course of his experiments, discovered that when a little acetic acid was added to assafœtida mixture, it kept in comparatively good condition for some time, and, on the basis of his observation, he proposes the following formula for a concentrated mixture: Assafœtida (finest tears), 240 grains; sugar, 90 grains; dilute acetic acid, f℥j; water, f℥iij. Triturate the assafœtida with the sugar, then with sufficient water to make a smooth paste, then with the remaining water in successive portions, and, finally, add the dilute acetic acid. Keep the mixture well protected from light. When this mixture is diluted with three volumes of water, a mixture corresponding to the officinal is formed.

For cleaning mortars in which assafœtida has been used, the author recommends potassa solution, to be followed by a paste of bitter almonds, peach kernels, or cherry laurel leaves, and afterwards by soap and water. A. J. Ph., June, 1874, pp. 267–269.

Chalk Mixture.—For convenience in dispensing Mr. R. Rother proposes a compound chalk powder, made by mixing 2 ounces of *precipitated* carbonate of calcium, 1 ounce each of gum arabic and sugar in fine powder, and 8 minims of oil of cinnamon. One drachm of this powder, triturated with 1 fluid ounce of water, form a mixture corresponding to the officinal preparation. The Pharm., Oct., 1873, p. 308.

Cholera Mixture (Hamlin's).—Mr. A. E. Ebert furnishes the following formulæ:

No. 1. Take of tincture of opium, tincture of camphor, of each, 1 part; tincture of rhubarb, 2 parts.

No. 2. Take of tincture of opium, tincture of capsicum, tincture of cardamom co., ginger (tr.?), of each, equal parts. Mix. The Pharm., July, 1873, p. 221.

Cholera Mixture (Rushenberger's).—The same authority gives the following formula: Take of tincture of ginger, tincture of capsicum, tincture of peppermint (spir. menth. pip. ?), tincture of opium, of each, equal parts. Mix. Ibid.

Chlorodyne.—Mr. A. E. Ebert offers the following formula: Take of sulphate of morphia, grs. 80; dilute hydrocyanic acid, glycerin, caromel, of each, f℥ss.; extract of Indian hemp, ℈ij; oil of peppermint, ʒss.; oleo-resin of capsicum, gtt. xv; chloroform, f℥vj; alcohol, f℥j. Mix. The Pharm., July, 1873, p. 221.

Ferrated Cod-liver Oil.—J. Müller prepares a ferrated cod-liver oil by triturating 1 part of benzoate of peroxide of iron with 100 parts of pale cod-liver oil, agitating frequently during several days, and then filtering. The resulting preparation is yellowish-brown, and perfectly transparent. The benzoate of iron should be prepared with benzoic acid prepared from benzoin, the commercial benzoate being prepared from hippuric acid, communicating to the oil an unpleasant odor and taste.

The author had previously prepared a ferrated cod-liver oil by adding an ethereal solution of 1 part of sublimed sesquichloride of iron to 100 parts of oil, but found that it was very prone to become rancid, and that it possessed a dark violet, nearly black, color. Arch. Ph., Dec., 1873, p. 534.

EXTRACTS.

Extract of Colocynth.—It has been determined by Mr. I. B. Barnes that when colocynth pulp is exhausted by two macerations in cold distilled water, and the liquid is then boiled to coagulate albuminous matter, strained, and evaporated to dryness, as much simple extract is obtainable as when the same amount of pulp is exhausted with proof spirit. Ph. Jour. Trans., Nov. 8th, 1873, p. 361.

Extract of Malt.—Mr. Joseph Rohrer prepares it as follows: 1 pound of coarsely ground malt is macerated for three hours with 1 pint of distilled water, then 4 pints of distilled water is added at a temperature of 65° C. (= 149° F.), keeping the same at this temperature for an hour; the mixture is then poured on a muslin strainer, and set aside. The residue left on the strainer is again treated with 3 pints of hot distilled water and boiled for one-quarter of an hour, after which it is removed from the fire and allowed to cool to 75° C. (= 167° F.), then strained as before, mixed with the previously strained liquid, and the united liquids are kept at a temperature of 50° C. (= 122° F.) for an hour, or until starch is no longer indicated by iodine. The liquid is then evaporated to about two-thirds its volume, is then filtered through paper to separate coagulated albumen, and, finally, it is evaporated to the consistence of honey. The extract so prepared yields about 56.25 per cent. of dried substance, which contains 1.4737 per cent. of phosphates. The Pharmacist, May, 1874, p. 133.

Extract of Meat.—The following comparative analysis of extract of meat made by the "Liebig Company" and that made by the "San Antonio Meat Extract Company," has been made by C. F. Chandler, Ph.D., and F. A. Cairns, M.D.:

	Liebig's Fray Bentos extract.	San Antonio meat extract.
Water (expelled at 212° F.),	17.21	14.78
Ash,	13.01	18.16
Substances soluble in 88 per cent. alcohol dried at 212° F.,	33.09	44.57
Fat, etc., soluble in ether,	0.14	0.18
Total nitrogen,	8.18	9.12
Nitrogen in portion soluble in alcohol,	3.19	4.75
Soda,	2.44	2.35
Potassa,	9.20	7.55
Lime,	0.05	0.06
Magnesia,	0.56	0.50
Oxide of iron,	0.02	0.07
Chlorine,	2.98	1.95
Sulphur,	0.29	0.22
Sulphuric acid (SO_3),	0.03	0.03
Phosphoric acid (PO_5),	8.20	5.64

The most important test of the comparative value of the extracts is probably the percentage of nitrogenous matter soluble in alcohol and the percentage of nitrogen in this matter. A. J. Ph., May, 1874, p. 239, from Am. Chemist, 1874.

Dr. W. H. Taylor gives the following as the composition of Valentine's preparation of meat juice:

Water,		61 12
Organic substances,		27.90
Containing:		
Uncoagulated albumen,	1.11	
Creatin, creatinin, and other organic constituents of flesh juice and blood,	26.66	
Fat,	.13	
Inorganic substances,		10.98
Containing:		
Chloride of sodium,	1.42	
Sulphate of potassium,	.52	
Phosphates of iron, calcium, and magnesium,	1.21	
Phosphates of potassium and sodium,	7.83	

Am. Jour. Ph., July, 1873, p. 325, from Virginia Clinical Record.

FLUID EXTRACTS.

Fluid Extract of Orange-Peel.—Mr. Munroe Bond recommends its preparation as follows: Take of sweet orange-peel in moderately fine powder ℥xvj, glycerin f℥iij, alcohol, water, each a sufficient quantity. Mix 14 fluid ounces of alcohol with 2 fluid ounces of glycerin; moisten the orange-peel thoroughly with 12 fluid ounces of the mixture in a large wedgewood mortar, or other convenient vessel, and, having covered it carefully, let it stand for twelve hours; then pack moderately firm in a suitable percolator, and proceed as directed in the officinal directions for fluid extracts. Finish the percolation with a mixture of 2 parts of alcohol and 1 part of water; reserve the first 14 fluid ounces, add 1 fluid ounce of glycerin to the remainder, carefully evaporate to 2 fluid ounces, and mix with the reserved portion. Fluid extract of orange prepared in this manner has a heavy rich appearance, is permanent, and possesses all the aroma of the orange-peel, if a fresh and good article of the drug has been employed. A. J. Ph., Nov., 1873, p. 482.

Fluid Extract of Cinchona.—Mr. R. Rother advises the use of chlorhydric acid in addition to a menstruum composed of

3 parts of strong alcohol and 1 part of water, for the extraction of Peruvian bark in preparing fluid extract. For a pint of fluid extract he recommends from one to two fluid ounces of chlorhydric acid of the specific gravity of 1.16. The Pharmacist, Oct., 1873, pp. 301–305.

Fluid Extract of Ipecacuanha.—Mr. Richard V. Mattison recommends the following as an improvement of the officinal, by which he secures a perfectly clear and limpid fluid extract, which forms a clear and elegant syrup:

Take 80 troy ounces of carefully selected ipecac root, grind to appropriate powder, and, after moistening thoroughly, pack firmly in a cylindrical percolator, and allow it to stand four days as directed, then using the officinal menstruum, allow percolation to proceed slowly until the root is exhausted. To the percolate add 10 fluid ounces of glycerin, and evaporate at a temperature not exceeding 140° F. (if the temperature is allowed to rise higher, a gelatinous mass will result) until reduced to the measure of 55 fluid ounces. Transfer this to a moistened filter, and allow it to drain. To the soft mass remaining upon the filter, consisting of the peculiar substance usually called resin (though not so, properly speaking), water is added by means of a spritz, and the whole thoroughly washed until the filtrate measures 60 fluid ounces. This causes a reprecipitation of the resinous substance, which necessitates a refiltration of the filtrate. To this second filtrate 20 fluid ounces of glycerin is added, and the whole well mixed. A. J. Ph., Nov., 1873, p. 481.

Aqueous Fluid Extract of Senna.—Mr. Adolph G. Vogeler recommends its preparation by percolating senna in coarse powder with cold water until the percolate passes tasteless, evaporating the percolate from 16 troy ounces of senna to 16 fluid ounces, dissolving in this 10 ounces av. of sugar, and continuing the evaporation to 16 fluid ounces. The preparation keeps well in a cool place; is more agreeable to take than the officinal article, and acts as a brisk cathartic without producing any unpleasant sensations. The Pharm., Oct., 1873, p. 309.

Fluid Extract of Sarsaparilla.—According to the experience of Prof. J. F. Judge, fluid extract of sarsaparilla should be made by repercolation with a menstruum composed of 5 parts of alcohol and 3 parts of water. A fluid extract so prepared has been kept for thirteen months, and showed no signs of deposit. See Proceedings, 1873.

Fluid Extract of Cannabis Indica.—Mr. Henry W. Buchman has examined sixteen samples of this unofficinal preparation made by different manufacturers and compared them with a "standard" fluid extract, prepared from the finely powdered dried tops. The experiments were made by evaporating one thousand grains of the respective fluid extracts until the residue ceased to lose weight, and determining the weight of such residue. Glycerin having been used with the menstruum in a number of the samples, this was washed away with a little water. The following is the result:

"Standard"	left	101.00	grains	of Extract	(= 78.3	grains	resin.)
No. 2	"	100.21	"	"	= 74	"	"
No. 3	"	97.90	"	"	= 73.2	"	"
No. 4	"	83.75	"	"	= 68	"	"
No. 5	"	83.00	"	"	= 65.3	"	"
No. 6	"	82.20	"	"	= 64	"	"
No. 7	"	76.00	"	"	= 54.5	"	"
No. 8	"	58.00	"	"	= 38	"	"
No. 9	"	57.00	"	"	= 35.5	"	"
No. 10	"	56 00	"	"	= 34	"	"
No. 11	"	49.05	"	"	= 29	"	"
No. 12	"	43.00	"	"	= 27.25	"	"
No. 13	"	41.00	"	"	= 26	"	"
No. 14	"	37.00	"	"	= 23.5	"	"
No. 15	"	25.25	"	"	= 18	"	"
No. 16	"	23.00	"	"	= 17.5	"	"
No. 17	"	44.00	"	"	= none.		

The resin was determined by redissolving the extracts obtained in a small quantity of 95 per cent. alcohol, precipitating the alcoholic solution in water, collecting on a tared filter, washing, drying, and weighing. The Pharm., April, 1874, p. 97.

Fluid Extract of Sumach Berries.—Prof. J. P. Remington recommends the following formula: Sumach berries, in moderately fine powder, 16 troy ounces, glycerin 4 fluid ounces, alcohol, water, of each a sufficient quantity. Displace the powder, after the general directions of the Pharmacopœia for fluid extracts, with a mixture of 8 fluid ounces of alcohol, 3 fluid ounces of glycerin, and 5 fluid ounces of water (followed by diluted alcohol ?), until 24 fluid ounces of percolate are obtained, of which reserve the first 14 fluid ounces, evaporate the remainder (after the addition of 1 fluid ounce of glycerin ?) to 2 fluid ounces, and mix with the reserve. A. J. Ph., Jan., 1874, p. 7.

Extr. Castaneæ Fluid, prepared by Prof. Maisch's method, has been experimented with by Dr. J. Eisenstein, who recommends its use in the treatment of hooping-cough. His own experiments are not conclusive, but he had obtained favorable results. He finds that it is readily taken by children, especially if mixed with syrup. Zeitschr. Œst. Ap. Ver., 1874, No. 10, p. 192.

Fluid Extract of Sweet Fern (Comptonia asplenifolia).—R. T. Chiles obtains it by percolating 16 troy ounces of the leaves, in fine powder, with dilute alcohol, reserving the first 12 fluid ounces, obtaining 2 pints more of percolate, evaporating this to four fluid ounces, and mixing it with the reserve. The resulting preparation fully represents the virtues of the drug. A. J. Ph., July, 1873, p. 304.

GLYCEROLES.

Glyceroles.—Guichard advocates the use of glycerin as a substitute for sugar in syrups, recommending that they be prepared from infusions, evaporating these to the consistence of extract (?) and then dissolving the extract in glycerin. Thus, syrup of ipecacuanha is to be prepared with ext. ipecac, 10.0 parts; glycerin, 990.0 parts. Arch. Pharm., Jan., 1874, p. 81; Rep de Ph.

Glycerate of Sucrate of Lime is proposed by Latour, and is prepared as follows: 200 grammes slacked limed and 400 grammes sugar are mixed thoroughly in a mortar; 2 kilogrammes of water is then added in small portions, so as to obtain a clear pulp without lumps; the mixture is transferred to a stoppered flask, and, after contact for twenty-four hours, is filtered. Four hundred grammes of glycerin is then added, and the liquid is evaporated to one litre. So prepared, the author calls it *concentrated glycerate of sucrate of lime*, and it has a density of 1.280 at 15° C. (= 59° F.), and contains in 100 c.c. 7.716 grammes of lime, corresponding to 56.55 grammes of dry sucrate. Applied to the skin this glycerate forms a kind of varnish, which, under the influence of transpiration, is detached in form of lumps; upon inflamed surfaces it produces a feeling of coolness and comfort. It is not coagulated by boiling; but coagulation takes place if it be diluted with four times its bulk of water. A *dilute glycerate of sucrate of lime* consists, as proposed by the author, of the above solution before evaporation, which contains 3.512 grammes lime (= 26.05 grammes of dry sucrate of lime) in 100 c.c. This dilute solution is proposed to be used for making lime liniment (see Liniments in this report). Ph. Jour. Trans., Oct. 25th, 1873, p. 321; Rep. de Pharm., 1873.

HONEYS.

Mel Depuratum.—The unsatisfactory results in depurating honey by the ordinary methods has led Dr. Rieckher to make experiments, by which he has determined a satisfactory chemical method. He finds that when the honey, diluted with 2 parts of water, is heated upon a steam-bath for an hour with pure hydrated alumina (must be perfectly free from potassa and sulphuric acid), the alumina carries the coloring matter down with it, and afterwards permits the ready filtration of the honey through good, dense filtering-paper. The alumina is prepared for this by dissolving equal parts of alum and chloride of barium separately in 20 parts of water, mixing, decanting the clear liquid from the sulphate of barium, filtering, and precipitating with ammonia. The voluminous precipitate is best washed upon cotton cloth contained in a perforated porcelain funnel. The quantity of alumina obtained from 50 grammes alum is sufficient to clarify 4 pounds honey.

The clear solution of honey may afterwards be evaporated upon the steam (or water) bath, without becoming darker by the heat, as is the case when ordinary filtered solution of honey is evaporated. Arch. Ph., March, 1874, p. 283.

INFUSIONS.

At a meeting of the Pharmaceutical Society of Paris, M. Marais exhibited infusions of clove, pink, peony, and red poppy, made both with distilled and common water. Those made with common water were completely altered, while those made with distilled water had retained their agreeable aroma and color. It had already long since been demonstrated by Ward that tea yields a more agreeable infusion with much less tea if distilled water is used. M. Méhu is of the opinion that, in preparing extracts, distilled water should be used. Am. Jour. Pharm., Sept., 1873, p. 425.

Infusion of Roses.—Mr. J. B. Barnes observes that the infusion of roses (Ph. Br.), which loses its transparency when cold, becomes bright, and continues to keep so as long as the preparation will keep good, if 1 part of glycerin is added to 8 or 9 parts of infusion. He also finds that if, to a mixture of 1 grain of sulphate of quinia, 1 minim of dilute sulphuric acid, and 9 fluid drachms of infusion of roses, 3 fluid drachms of glycerin is added, the precipitate of tannate of quinia formed is redissolved. Ph. Jour. Trans., Nov. 8th, 1873, p. 361.

Infusion of Sweet Fern (Comptonia asplenifolia) is prepared by R. T. Chiles by infusing a half ounce of the leaves in a pint of boiling water; the decoction is prepared by boiling an ounce of the leaves in a pint and a quarter of water, and straining. Am. Jour. Pharm., July, 1873, p. 304.

LINIMENTS.

Linimentum Camphoræ.—Mr. Julius R. Schmidt suggests that the camphor, finely powdered, should be dissolved in the olive oil, after it has been heated to a temperature of 140° to 150° F.; thereby very much facilitating the solution of the camphor. The Pharm., Aug., 1873, p. 242.

Lime Liniment is, by Latour, proposed to be prepared from glycerate of sucrate of lime (see Glycerides) as follows: Ground-nut oil, 200 grammes; dilute glycerate of sucrate of lime, 100 grammes. Mix in a vessel having a large mouth. By substituting oil of sweet almonds a mixture is obtained that is a little less solid. Dr. Lagarde finds that it fulfils the principal requisites sought for in application to burns; that it efficaciously protects the injured surface from contact with air, does not adhere to the wound, diminishes the pain, modifies the suppuration, and hastens and controls the cicatrization. Ph. Jour. Trans., Oct. 25th, 1873, p. 321, from Rep. de Pharm., 1873.

MUCILAGES.

Mucilage of Gum Arabic, the use of which as a paste or cement is very much restricted, may, by the addition of a small percentage of sulphate of alumina, be made equal to the best glue. Such a preparation resulting, if to a solution of 250 grammes of gum arabic in 625 grammes of water a solution of 2 grammes of crystallized sulphate of alumina is added, will not only answer all the purposes of a good glue, but may be used as a cement for glass, porcelain, earthenware, etc.

PASTILLES.

Senna Pastilles.—E. Batilliat recommends pastilles of senna as a pleasant purgative and aperient, prepared according to the following formula: 1000 grammes senna is exhausted with cold water, to the infusion 250 grammes each of sugar and prune pulp, and 4 grammes of an aromatic (powdered cinnamon) is added, and the mixture is evaporated to the consistence of a thick electuary, which is divided into 400 tablets, and wrapped in fine glazed paper. Each tablet contains the activity of 2.5 grammes senna. Bull. de la Soc. Royale de Pharm. de Brux., 1873, No. 6; N. Rep. Ph., 1873, No. 6, p. 376.

PILLS.

Iodide of Iron Pills.—To insure success in their preparation Mr. Magnes-Lahens recommends the following precautions:

For the preparation of the iodide use as little water as possible, and do not filter the solution, using a slight excess of iron to prevent the alteration of the iodide during the preparation, as well as in keeping the pills. Use gum and sugar instead of honey to make the mass, and operate in an iron dish at a temperature not exceeding 50° to 60° C. (122° to 140° F.). On the basis of these rules the author has devised the following formula:

Take of pure iodine, 4.10 grammes; powdered iron, 1.90 grammes; powdered sugar, 2.50 grammes; powdered gum arabic, 2.50 grammes; distilled water, 2.50 grammes. Put in an iron dish the water and the powdered iron, add the iodine gradually, and facilitate the reaction by stirring with a spatula of iron, and by warming a little; when the reaction is complete, add the gum and sugar, then heat to about 50° C. (= 122 F.), stirring continually, and until the mass will cease to drop when a little is taken up with the end of a spatula. When that has been reached, the operation offers no further difficulties. To obtain the pills, incorporate into the mass five grammes of powdered licorice root, if necessary: heat it for some minutes; divide the mass into one hundred pills, roll them in powdered gum, and, if desired, coat with mastic or tolu.

If the pills are to be sugar-coated, incorporate with the mass 7.50 grammes of powdered gum arabic; then heat it slightly to soften it. The hundred pills obtained are rolled in powdered gum arabic, then placed in a suitable vessel, heated, and agitated with a circular motion until of the proper hardness, after which they may be sugar-coated. Each pill contains about five centigrammes of iodide of iron in a state of perfect purity.

The following is the mode of sugar-coating proposed by the author: Roll the pills quickly, about fifty at a time, with the hand, in a clear mucilage of gum arabic, spread thinly in a saucer. When they are completely moistened throw them into a basin containing a mixture of sugar, 9 parts, with gum arabic 1 part; agitate them until they are covered with a layer of the powder, heat them for about eight or ten minutes, at first very slightly, and afterwards increase the heat, rotating the pills continually. After cooling coat them a second and then a third time, following the process just described. So made they will keep in good condition a long time. Amer. Journ. Pharm., Nov., 1873, p. 498, from Journ. de Pharm. et de Chim.

Sugar-coated Pills.—R. Hildwein, in a criticism upon the sugar and gelatin-coated pills exhibited at the Vienna Exposition, deprecates the indiscriminate use of these pills in the United States, but nevertheless regards their introduction a decided progress in pharmacy, and is confident that, their manufacturers being conscientious in their preparation, they will prove valuable to the practitioner of medicine. Zeitschr. Œst. Apoth. Verein, 1873, No. 20, p. 345.

Quinine Pills.—A mass which remains permanently soft is made, according to Berguier, by mixing 5 parts gum arabic and 10 parts glycerin intimately, and then adding gradually 30 parts of sulphate of quinia; 3 parts of this mass contain 2 parts of sulphate of quinia, and its consistence remains such that other ingredients may readily be mixed with it. Zeitschr. Œst. Apoth. Ver., 1874, No. 5, p. 84; Rep. de Pharm.

Sugar-coated Quinine Pills.—Five samples of sugar-coated quinine pills, professedly 2 grains each, from different manufacturers, were examined by Dr. A. B. Lyons, of Detroit, Michigan, and were found not only to be deficient in sulphate of quinia, but also to contain certain alkaloids (of cinchona) not soluble, or but sparingly soluble in ether. The gross weight of the pills were, respectively, 4.8 grains, 4.7 grains, 3.8 grains, 3.7 grains, and 4.0 grains each. From five pills of each, in the order above given, he obtained amounts of quinine corresponding to the following quantities of sulphate: 9.55 grains, 9.5 grains, 7.4 grains, 6.2 grains, 4.3 grains. Am. Journ. Pharm., May, 1874, p. 219–221.

Pil. Ferri Carbonatis.—Mr. E. D. Chipman finds that a mixture of 2 parts honey and 3 parts of sugar is the proportion of these ingredients best suited to the preservation of the protocarbonate of iron. See Proceedings, 1873.

Oil of Turpentine Pills are prepared by Lachambre, as follows: 20 grammes of white wax is melted with 8 grammes of well-rectified oil of turpentine, and 2 drops of oil of lemon. The mixture is allowed to cool, incorporated with 9 grammes of powdered sugar, and divided into pills of twenty-five centigrammes each, which are rolled in starch powder, and preserved in a well-stoppered bottle. Thus prepared the pills are said not to distress the stomach, are easily digested, and do not cause disagreeable eructations. Chem. and Drug., Sept. 15th, 1873, p. 315 ; Journ. de Connais. Medicales.

PLASTERS.

Adhesive Plaster.—The formula of the Pharm. Germ. directs the use of oleic acid, as originally proposed by Jungclaussen, for the primary formation of lead plaster, which is afterwards united with resin and wax. Dr. Hager makes the statement that pure oleic acid is unfit for the purpose, and that only such commercial oleic acid should be used, that will, at a temperature of from 10° to 12° C. (= 50° to 53.6° F.), form nearly equal strata of an upper liquid, and transparent, and a lower whitish and turbid acid. If the upper stratum is much larger than the lower, the formation of a good plaster is uncertain; while a larger lower stratum promises a good plaster. Jungclaussen has, however, lately observed a commercial olein (oleic acid ?) which, while of the consistence of butter, and nearly colorless, failed to form a good plaster. Pharm. Centralhalle, 1874, No. 3, p. 18.

Eugen Dietrich's experience agrees in the main with the above. He finds, however, that the white, buttery olein, referred to above, will yield an excellent plaster, if the process is conducted with steam heat under increased pressure (about three atmospheres), the process may under these conditions be completed in four hours. The use of steam heat under pressure is furthermore recommended by the author, for the preparation of all plasters of that kind, as he finds that, by a lower pressure, and especially by simple steam heat, an incomplete plaster is formed. The quality of the plaster is, however, dependent on the quality of the olein employed; and when olive oil is employed, the employment of a higher than ordinary steam heat does not seem to be necessary. Ph. Centralhalle, 1874, No. 5, p. 35.

Flexible Gelatin Plaster.—Mr. Henry N. Rittenhouse submitted the following formula at the Richmond meeting of the Association: Isinglass (Russian), 10 ounces; glycerin, 1 ounce; water, 3 pints. Mix the water and glycerin; macerate the isinglass in the mixture for an hour or two, then boil ten or fifteen minutes, and strain through coarse muslin; spread the mixture in successive layers on about four square yards of silk, allowing each layer to dry before putting on the next. See Proceedings, 1873.

Vesicating Tissues.—The epispastic papers and blistering tissues which for years have been prepared in France by the method of Dr. Fumonge, and by the name Albespeyses, are made, according to that authority, with cantharides, containing as near as possible 4 per cent. (0.4 per cent.?) of cantharidin, and are more reliable than are those made with the isolated cantharidin or with cantharidate of potassium. Ph. Journ. Trans., July 12th, 1873, p. 26, from Practitioner.

POWDERS.

Preservation of Vegetable Powders.—Mr. L. Créteur reports on the method for the preservation of vegetable powders proposed by Louis Cornélis, pharmacist at Diest, and which essentially consists in keeping the powders dry by means of burned lime. This is effected by means of glass bottles, into the wide mouths of which hollow pear-shaped stoppers are fitted, having below a large opening, which gradually becomes smaller, and on the outside a threadlike groove for fastening the paper and linen. The cavity of the stopper is filled with pieces of burned lime, and double thicknesses of filtering-paper and linen are tied over it, after which the stopper is inserted. The author has had powdered rue, preserved in this manner, in his possession for four years, during which time it preserved its color and odor perfectly. Amer. Jour. Pharm., from Bull. Soc. Roy. Pharm. de Brux., November, 1873.

Powdered Camphor.—Mr. George F. Ebert finds glycerin the best medium to keep camphor in a finely divided state, and recommends the following manipulation: Mix 1 fluid drachm of glycerin and 5 fluid drachms of alcohol, add to 6 ounces of camphor, and triturate until a fine powder is obtained. The Pharm., May, 1874, p. 134.

Aromatic Powder.—Mr. Joseph Lemberger finds that the aromatic powder of the Pharmacopœia is more satisfactory when the whole ingredients are powdered together, than when the powders of the shops are simply mixed. See Proceedings, 1873.

Pulv. Cretæ Aromaticus, P. B.—This preparation, which is composed of cinnamon 40, saffron 30, nutmeg 30, cloves 15, cardamom 10, sugar 250, and prepared chalk 110 grains, and which the British Pharmacopœia directs to be prepared by mixing the powders thoroughly, and passing them through a fine sieve, occurs in British commerce of various shades of color from a bright ochre yellow, to the color of Dover's powder. Mr. Archibald Patterson, who has investigated the causes of these differences, states that these powders may all be equally genuine, the differences in color being caused by the manipulation. In order to impart to the powder a bright color, the manufacturer may use a little alcohol during the grinding, by which the saffron is partly dissolved, and imparts its color to the entire powder. If, to the contrary, the powder is made by the dispenser, without the addition of alcohol, the powder has the appearance of Dover's powder. The author deprecates the deviation practice, which, although the addition of alcohol does in no way interfere with the proper medicinal action of the powder, gives rise to misunderstanding between the vendor and consumer.* Pharm. Jour. Trans., June, 1873, p. 992.

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* The above is noticed, not so much on account of its intrinsic value to the American pharmacist, but with a view to draw attention to the fact that apparently trifling deviations from the pharmacopœial standard may lead to serious inconveniences or misunderstandings. A sample of "Pulv. Cretæ Compositus," prepared by me according to the British Pharmacopœia, possesses the color described by the author—the color of Dover's powder.—C. L. D.

Powdered Meat is prepared by Dannecy, pharmacien en chef of the hospitals of Bordeaux, by finely chopping the fresh meat, spreading it upon muslin, and drying it rapidly in a current of air. A friable mass is formed, which readily yields a brown, nearly odorless powder, possessing a feeble saline taste, and of which one (1) part represents five (5) parts of fresh meat. It is used and readily taken by patients by adding a teaspoonful to a cup of beef tea or soup, or by spreading upon bread. For children, it is mixed in certain proportion with the ingredient for biscuits. Arch. Pharm.

SOAPS.

Soft Soap.—In answer to a query, accepted at the meeting of this Association in 1872, Mr. P. F. Lehlbach submitted, at the meeting in 1873, the following working formula: Take of olive oil, 16 troy ounces; potassa, 6 troy ounces; water, a sufficient quantity. Dissolve 5 troy ounces of the potassa in 2 pints of water; add 8 ounces of this solution to the oil, in a suitable porcelain vessel, and place over a moderate fire. When the mixture has become quite thick gradually add the remainder of the solution of potassa; continue the heat, occasionally stirring until the mass has assumed a yellow, transparent gelatinous form; dissolve the remaining 1 ounce of potassa in 2 pints of water; add to the mass, and evaporate to the proper consistence. With proper care a good result is obtained. See Proceedings, 1873.

Soaps, made by the cold process, are usually preferred for toilet purposes, because they retain the glycerin liberated; but the presence of more or less free caustic alkali in them has hitherto been a serious objection. In a communication to the Paris Academy, Mialhe proposes to overcome this by subjecting the soap, in fine shavings, to an atmosphere of carbonic acid, by which the caustic soda is converted into bicarbonate, and thus produces a neutral soap. Ph. Centralhalle, 1873, No. 31, p. 269.

SOLUTIONS.

Effervescing Solution of Tartrate of Sodium.—Dr. A. W. Miller draws attention to such a solution as a substitute for solution of citrate of magnesium, and believes it to possess advantages over the latter apart from its smaller cost. The formula proposed is that of Mr. Joseph Landschütz, and is as follows:

Dissolve 9 ounces crystallized tartaric acid, and 17 ounces crystallized carbonate of sodium, in about 1 quart of cold water, and if the solution is not quite neutral neutralize it by an additional quantity of one or the other ingredients. Then dissolve in it 28 scruples of bicarbonate of potassium; filter, and add sufficient water to make the entire quantity measure 147 fluid ounces.

Make a syrup from 21 ounces best crushed sugar, 14 drachms crystallized tartaric acid, 10 ounces water, and 1 drachm spirit of lemon. Measure 1½ fluid ounces into each of fourteen bottles (12 ounces). Then pour in slowly the first solution, carefully avoiding admixture with the syrup; cork and tie each bottle as soon as filled. Each bottle so prepared contains about seven drachms of dry tartrate of sodium, which is a fair adult dose. A. Jour. Ph., July, 1873, p. 289.

Liquor Bismuthi.—Mr. C. Méhu, referring to the formula of Mr. C. H. Wood for its preparation, in which two equivalents of citric acid are ordered, states that he has satisfied himself that a single equivalent of citric acid is sufficient to obtain a perfectly stable solution of bismuth. He proposes its preparation as follows:

An ascertained weight of pure bismuth is dissolved in three times its weight of pure nitric acid, concentrated and crystallized. The mother-liquor is evaporated in a porcelain capsule, at a moderate temperature, so as to drive off the excess of acid, when, on cooling, the liquor forms a crystalline mass. All the crystals are put together, and a concentrated hot solution of one equivalent of citric acid is poured on, in which the crystals dissolve completely. This solution is divided equally; one portion is treated with solution of ammonia until in slight excess of the quantity required for complete solution; the remaining half is then added; the precipitate of citrate of bismuth is washed with warm water as long as a trace of acidity is evident, and is then dried in a stove. So prepared the citrate of bismuth dissolves in ammonia; the solution may be diluted at will to the strength desired, and will keep for years. Ph. Jour. Trans., Nov. 8th, 1873, p. 361.

Hypodermic Solutions of Alkaloids may, according to the experience of Edward H. Squibb, be protected from change by the solution of one-sixth of 1 per cent. of pure crystallized carbolic acid. See Proceedings, 1873.

Liquor Kino Fortior is proposed as a substitute for the unstable tincture of kino of the British Pharmacopœia by Mr. George Ellinor, and is prepared by triturating in a mortar 1 ounce of kino, 2 drachms of glycerin,* and 1 ounce of water, until dissolved, and then making up to f℥iv by the addition of water. The whole of the kino is dissolved; the sand and other earthy matter being thrown down after standing a week or so. One volume of this concentrated solution, mixed with four volumes of water, form a solution, corresponding relatively to the tincture of the British Pharmacopœia, but is, suggests the author, really stronger, as the whole of the kino is dissolved. The concentrated liquor seems to be stable. Ph. Jour. Trans., Oct. 25th, 1873, p. 336.

Liquor Picis Alkalinus is, according to Dr. L. D. Buckley, prepared as follows: ℞. Picis liquidæ, ℥ij; potassæ caustic., ℥j; aquæ, f℥v. Ft. solut. This mixes with water in all proportions; is intended for external use, and only moderately discolors the skin. A. J. Ph., July, 1873, p. 328, from Med. News and Library.

Solution of India-rubber.—This is prepared on a large scale for the manufacture of elastic fabrics as follows: The raw rubber is soaked in clear water, and boiled for about an hour to remove dirt. It is then cut into round slices about 1 centimetre in thickness, and rolled into sheets about 2 metres long and 0.15 metres broad, and is then dried in a warm chamber. From the rubber, so prepared, the solution is made by reducing about 26 kilos to small shreds, placing it into a wooden, zinc-lined vat, and treating it with a mixture of 50 kilos benzole and 70 kilos oil of turpentine, stirring the mass occasionally. Both the benzole and oil of turpentine must be perfectly free from fixed oil, else the resulting solution is unfit for the purpose intended. To test the solvents, small portions of each are evaporated to dryness in a water-bath. If any trace of fat remains the sample is at once rejected. Chem. News, July 11th, 1873; Reiman's Färberzeitung, 1873.

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* It is not clear whether the author means ℥ij or ʒij of glycerin; the character indicating ʒij (or ℥ij) being somewhat indistinct. Two drachms seems a small quantity, and can certainly not have the effect to cause the solution to keep well, or to increase the solvent action of the water very markedly.—C. L. D.

Solution of Gutta-percha, made by dissolving in a mixture of 10 parts bisulphite of carbon and 1 part oil of turpentine, as much gutta-percha as is necessary to form a syrupy liquid, is said to be an excellent cement for uniting leather belting. Ph. Centralhalle, 1874, No. 9, p. 69; Apoth. Zeitung.

Solution of Caoutchouc is recommended for remedial purposes (in certain cases of pulmonary tuberculosis, etc.) by Dr. T. R. Varick, and is prepared by macerating 1 drachm of caoutchouc, in thin slices, in 2 ounces of oil of turpentine until solution is effected, and then draining. The dose is a teaspoonful. An electuary is also recommended (see Confections). Chem. and Drug., Feb., 1874, p. 48, from London Med. Rec.; New York Med. Rec., Nov., 1873.

SYRUPS.

Syrup of Orange-peel is by Mr. Munroe Bond recommended to be prepared from the fluid extract prepared by his method (see Fluid Extracts in this report). He states that when 1 fluid ounce of the fluid extract is mixed with 15 fluid ounces of syrup, the resulting syrup is stronger and better than that prepared by the officinal process, and is entirely destitute of any opaqueness.

Four fluid drachms of the fluid extract, and a few drops of solution of citric acid mixed with 1 pint of syrup, make a syrup for mineral water which is unsurpassed in delicacy of flavor. A. J. Ph., Nov., 1873, p. 483.

Syrup of Citric Acid.—A delicately flavored syrup which will be clear and bright, and is free from the harshness of the officinal syrup, is obtained, according to Prof. J. P. Remington, if about double the quantity of oil of lemon, prescribed in the officinal formula, is first triturated with carbonate of magnesium, and the necessary quantity of water and the filtered lemon-water used to make the syrup, with sufficient sugar and citric acid. A. J. Ph., Dec., 1873, p. 534.

Syrup of Wild Cherry Bark.—Mr. Charles Schnabel suggests the use of a little glycerin in addition to the water for the extraction of wild cherry bark for syrup. The formula is not quite clear, the author omitting to indicate the amount of water that is to be mixed with the second portion of glycerin. Furthermore, he directs the evaporation of a portion of the percolate, which seems to be unnecessary. Perhaps the following modification is sufficiently near to the intention of the author, and will furnish a formula free from the objections above mentioned: Moisten 5 troy ounces of wild cherry bark in fine powder, with 4 fluid ounces of a mixture of 2 fluid ounces of glycerin and 14 fluid ounces of water, pack into a percolator, pour on the remaining menstruum, and allow to stand forty-eight hours. Then, by the aid of sufficient water towards the last, obtain 16 fluid ounces of percolate, in which dissolve 20 troy ounces of sugar. A. J. Ph., Jan., 1874, p. 11.

Mr. William H. Walling proposes its preparation by first using a menstruum of 4 fluid ounces of glycerin and 8 fluid ounces of water, and following this by water until 1 pint of percolate is obtained. The syrup keeps well, and gives more of the characteristic odor and taste of syrup of wild cherry than when made according to the United States Pharmacopœia. Ibid., Feb., 1874, p. 58.

Mr. Adolf G. Vogeler, referring to Mr. Rother's experience, contends that the use of glycerin along with the water in making the infusion of wild cherry bark, will prevent the generation of hydrocyanic acid if it is added to that portion of water with which the bark is first moistened. If added afterwards, however, its use is of value, as it dissolves out the bitter principle of the bark most readily. He therefore advocates the following formula: Take of wild cherry bark, in fine powder, 5 troy ounces; glycerin, 4 fluid ounces; water, sufficient; sugar, 23 troy ounces. Moisten the bark thoroughly with sufficient water, pack firmly in a glass percolator, and allow to macerate twenty-four hours, then pour on it the glycerin previously mixed with 8 fluid ounces of water. After this has disappeared from the surface continue the percolation with water to make the percolate measure 16 fluid ounces, and after removing this obtain 3 fluid ounces more of percolate. To the first portion add the sugar, agitate repeatedly, pour off the clear syrup, and dissolve the undissolved portion of sugar in the 3 fluid ounces of additional percolate. Mix the liquid so obtained, and, with water, make up the measure of syrup to 32 fluid ounces. The Pharm., March, 1874, p. 68.

Dry Syrup of Almonds.—To avoid the inconveniences resulting from the separation and rapid decomposition of almond syrup, Dr. Euders suggests a dry preparation from which the syrup may be very easily obtained. Twenty parts of sweet almonds are made into an emulsion with sufficient distilled water; the emulsion is mixed with 70 parts of sugar, and in a steam-bath rapidly evaporated to dryness; the residue is powdered and kept in well-corked vials. To prepare 100 parts of syrup, 68 parts of this powder are dissolved in 24 parts of water by the aid of heat, and then 5 parts of orange-flower water, and 3 parts of bitter-almond water are added. Am. J. Ph., from Arch. d. Pharm., June, 1874, p. 511.

Syrup of Sweet Fern (Comptonia asplenifolia) is recommended and prepared by Mr. R. T. Chiles by mixing 4 fluid ounces of fluid extract of sweet fern (see Fluid Extracts) with 12 fluid ounces of syrup. A. J. Ph., July, 1873, p. 304.

Iodated Syrup of Coffee.—Dr. Calvo recommends syrup of coffee as the best vehicle for disguising the taste of iodide of potassium, and proposes, for the administration of this salt, a syrup made by dissolving 16 grammes of the iodide in 500 grammes of syrup of coffee. Dose, a tablespoonful twice or thrice daily. Am. J. Ph., from Jour. de Pharm. et de Chim., April, 1871, p. 299.

Syrup of Iodized Tar has been proposed by M. Bretet, the process consisting in dissolving iodine, in certain proportion, in tar-water prepared by the process of Lefert, and dissolving in this a certain quantity of sugar. A commission, appointed for the purpose of examining into the merits of the process and preparation, reported to the "Paris Société de Pharmacie" the following modification: One gramme iodine is carefully and rapidly divided with 600 grammes of powdered sugar, the mixture is incorporated with 33 grammes of Norwegian tar previously washed (?), placed into a wide-mouthed, glass-stoppered bottle, and shaken frequently until cold, with 400 grammes of distilled water at 80° C. (= 176° F.). The product is then poured upon a moistened strainer and filtered through paper. The filtration is slow, but can be made in the open air without fear of any loss of iodine. So prepared the syrup is transparent, faintly amber-colored, and does not give off any iodine vapor. Ph. Jour. Trans., June 14th, 1873, p. 1002.

Syrup of Lactophosphate of Lime.—Ménières recommends the following formula for the preparation of syrup of lactophosphate of lime:

Lactophosphate of soda, very white and in plates, .	1	gramme.
Soluble acid phosphate of lime, ...	4	grammes.
Syrup of sugar, very white, ...	395	"

Dissolve the two salts together in a small quantity of distilled water at a very low temperature, and then add the solution to the syrup cold. A very limpid product is obtained, which may be flavored with a few drops of essence of lemon. Langelle recommends the following formula:

Phosphate of lime, pure and dry, in powder, . .	25	grammes.
Pure hydrochloric acid, ...	40	"
Concentrated lactic acid, q. s., about	50	"
Powdered white sugar, ...	1500	"
Distilled water and pure solution of ammonia, .	q. s.	

(In default of pure phosphate, 32 grammes of bone-ash may be used.) Gelatinous phosphate of lime is prepared in the usual manner, dissolved in water by the aid of a slight excess of lactic acid, brought to the weight of 800 grammes by the addition of distilled or aromatic water, and filtered upon the sugar. For all of which the author gives specific directions. Pharm. Jour. Trans., August 23d, 1873, p. 142; Répert. de Pharm.

New Syrup of Iodide of Iron.—Prof. J. P. Remington proposes the following formula, which is based upon the researches of Creuse: Take of resublimed iodine, 378.9 grains; iron wire, 90 grains; distilled water, 2 fluid ounces; citric acid (dry), 408 grains; carbonate of potassium (pure), 475 grains, or q. s. The iron and two-thirds of the iodine, accurately weighed, and half a fluid ounce of water, are allowed to react upon each other until a green solution is formed, which is filtered from the undissolved iron, and the latter rinsed with a small quantity of water. In the solution so obtained the remaining one-third of iodine is dissolved. In the meantime solution citrate of potassium is prepared with the quantities of citric acid and carbonate of potassium indicated in the formula, and the remainder of the water, and sufficient of this solution, while hot, is added to the solution of periodide of iron to produce a bright green color. Simple syrup is then added to bring the measure to 26 fluid ounces. A. J. Ph., Sept., 1873, p. 386.

Syrup of Iodide of Iron and Manganese.—Mr. J. U. Lloyd recommends the following formula: Sulphate of manganese, 240 grains; iodide of potassium, 288 grains; iodine, 744 grains; iron wire, 240 grains; sugar, 17 ounces avoirdupois; distilled water, q. s. Iodide of iron is made with the iodine, iron, and 3 fluid ounces of water; the solution is filtered on the sugar, contained in a suitable vessel, and the filter is washed with 2 fluid ounces of water. The sulphate of manganese and iodide of potassium are separately dissolved in a half fluid ounce of water, are mixed, the sulphate of potassium is allowed to precipitate, the mixture is then thrown on a filter and filtered on the sugar. The residue on the filter is washed with a half ounce of cold distilled water, and the operation is finished by adding enough distilled water to the filtered liquids and sugar to make the whole measure 20 fluid ounces. When the sugar is completely dissolved, filter. A. J. Ph., Jan., 1874, p. 6.

TINCTURES.

Ethereal Tinctures.—The rapid evaporation of ethereal tinctures from narrow vessels is effected by the following simple contrivance of Dr. G. Vulpius. The ethereal tincture is introduced into a beaker or cylinder, and a glass siphon is arranged in such a manner that the short leg is suspended at a distance of not over one centimetre above the surface of the ethereal liquid, while the long leg may reach nearly to the floor. Slight suction at the latter aperture will cause the heavy ether vapor to be siphoned off from above the liquid, and the evaporation of the ether and removal of its vapor continues so rapidly, that at the summer temperature the ether will run off in drops, if the long leg be surrounded by a layer of moist paper. The short siphon leg should be lowered in proportion as the ethereal liquid evaporates. Am. Jour. Pharm., from Arch. d. Pharm., June, 1874, p. 522.

Tincture of Kino.—Mr. R. Rother prefers a stronger tincture of kino than the officinal, both as regards the alcohol and the kino, and recommends its preparation as follows: Triturate 3 troy ounces of kino thoroughly in a capacious mortar, pour on a half pint of strong alcohol, continue the stirring a short time, and decant the clear liquid, after the residue has subsided. Then add to the residue a half pint more of strong alcohol; triturate again as before, and unite the whole with the first solution; set the mixture aside for about half an hour, shaking it frequently, then pour the whole of it on a muslin strainer, and press out the liquid; to the residue add 3 fluid ounces of strong alcohol; press it out again; unite the strained liquids, and complete the tincture by adding water to the measure of two pints, and mix. The Pharm., Aug., 1873, p. 239.

By the above process the author fails to get more alcohol into the preparation than is directed by the officinal process. He very properly does not prepare the tincture stronger in kino than is officinally required. Your reporter refers to remarks made in his report of last year, in which he states that using the officinal ingredients, the kino in fine powder, and agitating them together, secures in half an hour a preparation which is unexceptionable.

Tinct. Opium.—Mr. G. W. Kennedy has examined ten samples of tincture of opium, purchased at different stores, and found them to contain the following quantities of morphia in the fluid ounce:

3.20, 3.25, 2.90, 1.60, 2.80, 2.65, 1.50, 1.65, 3.30, 2.65 grains.

They also contained, in the order above given, the following quantities of narcotina:

0.30, 0.85, 0.75, 0.35, 0.65, 0.20, 0.25, 0.33, 0.80, 0 60 grains.

The United States Dispensatory gives as the minimum quantity of morphia that good opium should contain, 7 per cent., which would require the tincture to contain at least 2.62 grains in the fluid ounce. Am. Jour. Pharm., Feb., 1874, p. 56.

The editor of the American Journal of Pharmacy explains some discrepancies in the author's calculations. The Pharmacopœia of 1860 required *commercial* opium to contain at least 7 per cent. of morphia. Allowing the opium to contain 20 per cent. of moisture, tincture of opium of the Pharmacopœia of 1860 should contain not less than 3.28 grains of morphia. The requirements of the new Pharmacopœia for dry opium are 10 per cent., or 3.75 grains of morphia for the fluid ounce of tincture of opium. Ibid.

Tinct. Opium is, according to the Codex, prepared from extract of opium by dissolving it in diluted alcohol of 56°. Méniere finds that if the extract has been prepared with ordinary instead of distilled water, an undissolved portion remains, which contains, besides the constituents of the water, more or less morphia. Arch. Ph., Jan., 1874, p. 81.

Tincture of Rhubarb.—Mr. J. B. Moore presents the following modified formula for its preparation, which, he states, will yield a preparation that does not deposit by age, and consequently at all times represents the proper amount of the medicinal ingredients: ℞. Pulv. rhei, No. 40, ℥iij; pulv. cardamomi, No. 40, ℥ss.; glycerinæ, f℥iv fʒij; alcohol fort., f℥xvij; aquæ, f℥xij fʒvj; alcohol dil., q. s. Mix the glycerin, alcohol fort., and water, moisten the mixed powders with the mixture, pack into a glass jar or other vessel, and allow to stand twenty-four hours. Then rub the mixture through a No. 20 sieve, pack into a percolator, and percolate, first with the remainder of the menstruum, and finally with dilute alcohol, until 32 fluid ounces are obtained. Am. Jour. Pharm., July, 1873, p. 306.

Tincture of Valerian.—Mr. Charles C. Patterson recommends the following formula: Moisten 2 ounces of valerian root, in fine powder, with 1 ounce of diluted alcohol, pack into a percolator, and percolate with sufficient dilute alcohol until 4 ounces are obtained, which set aside. Continue the percolation with a mixture of 4 ounces of glycerin (Bower's) and 8 ounces of water, add the percolate so obtained to the reserved tincture, triturate with ½ ounce carbonate of magnesium, and filter. The result is a dark tincture, which does not separate on standing.

It is presumable that the author wishes to indicate fluid measure for the liquid ingredients. He seems not to have determined by experiment whether a tincture made by his method accurately represents the medicinal activity of valerian root. Am. Jour. Pharm., Sept., 1873, p. 392.

Tincture of Iodide of Tannin of Dr. Boinet.—This preparation is prepared by dissolving 50.0 parts of tannin in 500.0 distilled water, and adding 25.0 tinct. iodine. He uses and recommends it as the primary application for all fresh wounds, and states that by this treatment he has never observed diphtheritis, and only in isolated cases pyæmia. N. Jahr. Ph., 1873, p. 228.

New Tincture of Chloride of Iron.—A modification of Creuse's method is proposed by Prof. J. P. Remington. Five hundred and forty-four grains of citric acid is dissolved in one ounce of distilled water, heated to the boiling-point, and neutralized with 1000 grains (or q. s.) of carbonate of sodium. The solution of citrate of sodium so obtained is added to 1 fluid ounce of liq. ferri chlor., U. S. P., and made up to the measure of 4 fluid ounces by alcohol. Am. Jour. Pharm., Sept., 1873, p. 387.

WINES.

Bitter Wine of Iron.—Mr. Charles L. Mitchell recommends the following formula for its preparation: Ground cinchona calisaya, 192 grains; ground gentian root, 128 grains; soluble citrate of iron, 192 grains; sherry wine, 13 fluid ounces; brandy, 1 fluid ounce; alcohol, 1 fluid ounce; oil of orange, 12 minims; sugar, 2 ounces; solution of tersulph. iron, 2 fluid ounces; water of ammonia, q. s. Dissolve the oil of orange in the alcohol, and mix with the sherry wine and brandy. With this menstruum percolate the ground drugs, securing 15 fluid ounces by pouring on water. With the iron solution and ammonia make hydrated sesquioxide of iron, which, when well washed and drained, mix with the percolate, shaking frequently, until a portion filtered off has a light yellow color and does not blacken with tincture of chloride of iron. Then filter, dissolve the citrate of iron and sugar, and bring up to the measure of 16 fluid ounces with a little water. Am. Jour. Pharm., Nov., 1873, p. 483.

MATERIA MEDICA.

a. Vegetable Substances.

FUNGI.

A. Würz gives preliminary notice that he has found in several species of fungi a saccharine substance different from mannit, and that this substance corresponds in its characteristics to the trehalose, which Berthelot extracted from the trehala by alcohol. Its identity was proven by determining the melting-point, by its remarkable rotating power, by its crystalline form, and by its great stability. In some fungi —*i. e.*, Agaricus muscarius—trehalose only is contained (to the amount of 10 per cent. of the dry substance); while in others mannit alone is contained. But the majority contains both substances, and some in addition, a saccharine substance which it is very difficult to isolate. The author furthermore suggests the possibility that the mycose, discovered by Mitscherlich in ergot, and which was found by Ludwig in Fungus sambuci, is identical with trehalose. Compt. Rend., 1873, No. 10, p. 649; Arch. Pharm., Sept., 1873, p. 440.

The luminosity of decaying wood, which had heretofore been generally explained by assuming a peculiar process of combustion incident to the decay, is now found to be owing to the formation of a fungous growth. This fungus may be removed and transferred to other substances without losing its luminosity, but is destroyed under the influence of heat or of certain gases. It is also formed on other parts of plants, and even upon animal substances undergoing putrefactive change. Zeitschr. Œst. Apoth. Ver., No. 5, 1874, p. 86.

Ergot.—A very active preparation of ergot, which is particularly adapted for subcutaneous injection, is suggested by Dr. Wernich, of Berlin, who proposes to exhaust the ergot with ether, strong alcohol, and finally with water; the infusion is then dialyzed through parchment-paper, and the solution evaporated; this extract, after acidulation with sulphuric acid, was mostly soluble in alcohol, and when again carefully neutralized by soda, yielded to weak alcohol all its active properties. Subcutaneously injected, the author obtained good results promptly, and the inconveniences attending the hypodermic use were slight, and disappeared rapidly. Amer. Jour. Pharm., from Apotheker Zeitung, 1874, No. 17.

When making fluid extract from ergot according to the U. S. Pharm., the attention of O. Ficinus was drawn to the large proportion of fixed oil (30 per cent.) contained in it, to the presence of which he ascribes the difficulty of pulverizing the ergot, and the readiness with which it spoils. He recommends, therefore, that ergot be extracted with ether to remove the fixed oil, and a corresponding quantity of some inert substance—licorice root or milk sugar—added; believing that so treated the powder will keep well. The author describes the oil as a thick liquid, congealing partially in the cold, of an odor when fresh reminding of cocoa butter, but very prone to change, and becoming rancid. He states that a portion of oil, obtained by him, is being examined by Prof. Reichardt.* Arch. Pharm., Sept., 1873, p. 219.

At the meeting of the Association in Richmond, Dr. E. R. Squibb read an exceedingly interesting and comprehensive note on Ergot and its preparation, which will be perused and studied with profit. See Proceedings, 1873.

LICHENES.

Chondrus Crispus.—J. Dalmon has for some time frequently observed the Irish moss of French commerce to be adulterated with

Gigartina acicularis, Lam., and he states that he has received specimens of moss containing as much as 40 per cent. of it. The mixture is readily discovered upon a moderately careful examination, the Gigartina moss consisting of cylindrical, cartilaginous, subdichotomous, flexuous fronds, with acuminate, most frequently bifurcated, branches, sending out lateral, horizontal, spiniform branchlets. The mixture is also manifested by the light-brown tint retained by the pedicles, which give to the moss the appearance of a less uniform color than that possessed ordinarily by carrageen. It swells considerably in cold water, yields much less jelly to boiling water, and the jelly has no consistence. The ash of the plant has the following constitution: Chlorides of sodium and magnesium 0.60, sulphate of magnesium 1.20, sulphate of calcium 6.60, carbonate of calcium 5.40, silica 2.20 = 16.00. No trace of iodine was discovered. A. J. Ph., March, 1874, p. 125; Ph. Jour. Trans., 1874, from Rép. de Ph.

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* Such examination certainly seems necessary, as the oil extracted by ether contains, according to various authorities, substances that may deprive the residual ergot of a portion of its active ingredient.—C. L. D.

Litmus.—According to Dr. F. Mohr, infusion of litmus will always produce a violet reaction toward the end of a neutralizing test, owing to the presence of carbonates in the litmus. These (carbonates) are difficult to remove by the ordinary methods proposed, but may be removed by a method suggested by him, which consists in adding to the infusion sulphuric acid, drop by drop, until it is decidedly acid and red, then boiling it to drive off carbonic acid, and adding baryta water until the solution becomes blue, or violet, as may be desired. Solution, so prepared, passes immediately from red to blue, or blue to red, during neutralizations with acids and alkalies, containing no carbonic acid. Owing to the difficulty with which litmus solutions filter, the author recommends that the litmus be immersed in its unpowdered form in water, allowed to macerate, and then decanted. He also finds that the acid (red) solution is not liable to mould or to form slimy deposits by standing. He has previously drawn attention to the necessity of extracting litmus with alcohol before making the infusion from it, in order to remove a dirty coloring matter, which is not sensitive to acids. Zeitschr. Anal. Ch., 1873, No. 4, p. 372.

LYCOPODIACEÆ.

Lycopodium.—M. Paul Cazeneuve states (Répertoire de Pharmacie, N. S., i, 630) that he has been supplied with a quantity of pine pollen in place of lycopodium. Having had his suspicions aroused by the yellower color, and smaller degree of mobility and fineness, he examined it under the microscope, and recognized in it the characters given as those of pollen of conifers, and especially of pine pollen, this latter always being constituted by two lateral cells near to a central cell, which is ruptured by the pollenic contents for fecundation. How this pollen is collected is a matter for conjecture, but it may be obtained at a lower price than lycopodium, and M. Cazeneuve thinks it to be a substance worthy of further investigation. He has found that in rolling of pills and plasters and the healing of chaps, etc., it presents the same advantages as lycopodium. It is nearly neutral ; the tegumentary membrane has the cellulose nature of other pollens ; it contains a little resinous matter, and the pine odor is faintly perceptible in a large quantity. The proportion of mineral matter is very small. One grain of pollen, dried in a water-bath, gave, when incinerated, forty-five milligrammes of white ash, composed of phosphates of potash and lime, and traces of sulphates and chlorides. Am. J. Ph., from Pharm. Journ. and Trans., Dec. 20th, 1873.

Lycopodium.—Mr. Benjamin Lillard has met with a sample of lycopodium which, owing to certain physical peculiarities, he was led to examine, and found it to be adulterated with a considerable percentage of dextrin. Lycopodium, so adulterated, will readily pass for a pure article when not exposed to moisture, but when so exposed it assumes a lumpy appearance. The Pharm., Sept., 1873, p. 283.

FILICES.

Pinawar-djambe and *Pakoe-kidang*, two drugs that enjoy high repute in the East Indies as styptics, the botanical origin of which had heretofore been in doubt, have, by Lebedank, been determined to be derived from ferns. The Pinawar-djambe is obtained from

Cyathea Smithii, which abounds in Sumatra, Timor, and Amboina. The drug reaches the European markets overland by way of Turkestan and Russia; forms reddish, very fine woolly masses, which under the microscope prove to be composed of long hairy threads, in which no air-cells are visible. The cellular tissue is smooth and glistening, and has, chemically, the composition of cork. The Pakoe-kidang is obtained from

Aspidium Baromez, which abounds in Malacca, Borneo, and the equatorial zone of the Indian Archipelago. The drug is composed of thicker threads, the individual hairy threads being rigid and multicellular ; the cells, however, being united lengthwise, the transverse joints of two cells being more prominently visible. By comparing these with the paleæ of the rhizome of Nephrodium filix mas, it becomes evident that the Pinawar, as well as the Pakoe, are simply epidermal formations—comparable to hair—of Cyathea Smithii and Aspidium Baromez, and that they are not formed upon the rhizome but upon the leaves of the respective plants.

The value of these drugs is dependent upon their lightness and their hygroscopic properties—by which, however, the individual threads do not swell—and, probably, also upon their resinous constituents. Arch. Ph., Sept., 1873, pp. 263–265; Jour. de Medecine et de Pharmacologie de Bruxelles, 1873.

GRAMINACEÆ.

Triticum Repens, L.—An analysis of the root (Rad. Graminis, Dog grass) has been made by Mr. Herman Müller, who found its sweet principle to be fruit-sugar (levulose) solely, it having heretofore generally been stated to contain "principally sugar and a sweet extractive matter." Besides sugar the author found it to contain a large percentage of a gum, which he names triticin; composition, $C_{24}H_{22}O_{22}$. A nitrogenous gummy substance was also obtained in considerable quantities (10.5 to 11.5 per cent.), but has not been further examined. Besides the above-named substances the author has determined the presence of considerable quantities of acid salts of malic acid. Arch. Pharm., June and July, 1873.

MELANTHACEÆ.

Veratrum Viride.—While recently preparing specimens of the alkaloids of Veratrum viride, according to the process of Mr. Charles Bullock (see A. J. Ph., 1865), Mr. Ch. L. Mitchell observed, that when the precipitate produced in acetic solution by carbonate of sodium was treated with warm dilute sulphuric acid, a considerable amount of a granular, whitish powder separated on cooling. He at first supposed this to be sulphate of calcium, but on examination he found it to be of organic constitution, and by appropriate experiments the substance proved to be identical with the jervia of Simon. The following is an outline of the process recommended by the author for its preparation: The alcoholic tincture is evaporated to small bulk, acidulated with acetic acid, and mixed with water. The aqueous solution is filtered, concentrated, and rendered strongly alkaline by carbonate of sodium. The precipitate is drained, dried, boiled in strong alcohol, the alcoholic solution evaporated to dryness, and digested in very dilute sulphuric acid. A granular powder, sulphate of jervia, deposits on cooling; is well washed, drained, and then boiled with strong solution of carbonate of sodium. The jervia, so liberated, is, after thorough washing, further purified by resolution in acetic acid, precipitation with ammonia, washing, and drying.

So obtained jervia is a light, white powder, capable of crystallizing from alcoholic solution; tasteless, inodorous, and feebly alkaline; insoluble in water, and freely soluble in boiling alcohol, from which it deposits on cooling. It is freely soluble in chloroform, but only sparingly in benzin. It forms soluble salts with acetic and phosphoric acids, and sparingly soluble salts with sulphuric, nitric, and muriatic acids. The most characteristic test for jervia is its reaction with concentrated sulphuric acid, which changes it immediately to a straw-yellow, and then gradually to a green color, and is quite delicate. The author compared the jervia from V. viride with some obtained from V. album, and found them to be identical in their reaction. A. J. Ph., March, 1874, p. 100.

SMILACEÆ.

Smilax China.—Prof. Dragendorff has examined samples of so-called china root in use in Turkestan, and there called, according to Johannson, "Tschub-i-tschini Gulabi," and finds that it is not a fungus, but the rhizoma of a smilax. The drug, therefore, corresponds to that generally accepted in Europe as china root. N. Rep. Ph., No. 2, 1874, p. 66.

LILIACEÆ.

Asparagus.—According to the investigations of Thumbach, sugar is unequally distributed in asparagus. The points were found nearly devoid of it, while the lower portion contained from 1.7 to 2.0 per cent. This peculiarity is explained by the rapid formation of cellular tissue in the upper portion, by which the sugar is rapidly used up to form cellulose. N. Rep. Pharm., 1873, No. 7, p. 391.

AMOMEÆ.

Amomum Grana Paradisi Afzelius.—By a process similar to that by which he obtained capsicol, from an ethereal extract of capsicum (see Capsicum in this report), Buchheim obtained from an ethereal extract of an alcoholic extract of paradise grains, an oily, exceedingly acrid substance, which he has named

Paradisol.—It is almost completely insoluble in water, but freely soluble in alcohol, ether, chloroform, and petroleum ether. Preliminary experiments, made with

Ginger, convince the author that besides volatile oil it contains a substance similar to paradisol. Vierteljahrschr. Ph., 1873, No. 4, pp. 510–511.

THYMELACEÆ.

Mezereon Bark.—Prof. R. Buchheim, convinced that the active constituents of mezereon bark are contained in an ethereal extract, operated upon such extract (Merck's) in order to determine its active constituents. By treating the extract with boiling petroleum ether, chlorophyll and fixed oil is removed. The latter, which is probably identical with that found in the mezereon fruit by Casselmann, he found, when purified by agitation with alcohol, to be perfectly inactive. The portion insoluble in petroleum ether was treated with warm alcohol; the alcoholic solution diluted with water to faint turbidity, filtered, boiled with animal charcoal, and evaporated; when a dark-brown mass remained of which the greater part was insoluble in ether. The portion dissolved by the ether, however, is the active constituent, mezereon resin, unchanged, while the residue, possessing acid properties, and called by him mezeric acid, is regarded by the author as a product of the decomposition of the mezereon resin. The latter he regards as the anhydride of mezeric acid, bearing the same relation to mezeric acid that the acrid resin of euphorbium bears to euphorbic acid (see Euphorbium in this report). The alcohol solution of the unchanged resin is exceedingly acrid, even more so than the euphorbium resin, and is readily converted into the acid modification by the action of alkalies. The latter modification is dark-brown, and forms red-brown solutions, from which it is precipitated by acetate of lead and other metallic salts. Its solutions are simply bitter, and do not possess the slightest acridity.

The facility with which, by the action of heat, the active resin is converted into the inactive modification, explains why the ethereal extract represents the activity of mezereon bark in a higher degree than does the alcoholic extract; and the author further states that even the ethereal extract only in part represents the bark; as when evaporation is conducted by heat a portion of mezeric acid is formed. Vierteljahrschr. Ph., 1873, No. 3, pp. 330–332.

POLYGONACEÆ.

Polygonum Aviculare, L.—Mr. John R. Jackson gives an account of a case of gravel which was successfully treated with a decoction of knot-grass, and remarks that a bundle of knot-grass has recently reached Kew from Berdiansk, Russia, with a wonderful account of its extraordinary power of curing stone and gravel diseases. The weed, which abounds in Great Britain and the European and American continents—and, as the author says, "generally flourishes best where its presence is not wanted," is recommended to be used as follows: Take a good liberal handful and boil gently in six tumblers of water, till it is reduced to about four tumblers. The dose is one or two tumblers, to be taken in the morning on an empty stomach. In bad cases it is given several times a day, but diet must be strictly kept. As a purifier of the blood, one tumbler of weaker decoction is recommended to be taken every morning. Pharm. Journ. Trans., Aug. 9th, 1873, p. 105.

Rheum.—Prof. E. Langethal reviews the more recent investigations on the source of rhubarb, and concludes that notwithstanding the fact that through the efforts of M. Dabry, the botanical gardens of Europe are now, or will be, in possession of plants that are of undoubted Chinese origin (see Proceedings, 1873), the question of species is not yet definitely settled. That the Chinese rhubarb of commerce is, however, altogether produced in Thibet, seems to be beyond question. Arch. Pharm., March, 1874, p. 239.

Prof. G. C. Wittstein gives in connection with the paper of Prof. Langethal, the substance of a reply, received from the celebrated traveller, H. v. Schlagintweit-Sakünlünski, to the question, whether he, during his extensive travels in Upper Asia, had opportunity to observe the growing plant. H. v. Schlagintweit-Sakünlünski had observed *various* species, not only in the Himalayas, where rain is abundant, but also in Thibet, which is usually dry. In the eastern Himalayas he had observed plants of over 1 metre in height, with stems 1 decimetre in diameter at the base. He fails, however, to indicate the particular species observed. In Thibet the leaves of one (or more ?) small rheum species are dried, and used for smoking. Arch. Ph., March, 1874, p. 246.

Chinese Rhubarb.—The following notes on Chinese rhubarb are from a recent report on the trade of Hankow. The writer first refers to the paragraph in Colonel Yule's "History of Marco Polo's Travels," where it is said that "over all the mountains of the province," meaning Tangut, the modern Kansuh, "rhubarb is found in great abundance, and thither merchants come to buy it, and carry it thence to all the world." The best rhubarb it appears is still produced in Kansuh, but one of the principal marts for the sale of the drug is Sanyüan, in Shensi, in which province also rhubarb is grown to a considerable extent. The cultivation in both provinces has, however, been seriously affected by the Mohammedan rebellion. Much of the rhubarb which comes hither is from Szechuan, but is generally of common quality, and is quoted at from 5 to 8 taels per picul; while the kind known as Shensi is usually quoted at from 15 to 50 taels. A Chinese informant says that the moist heat of the province of Szechuan is injurious to the preparation of the root. In both provinces, Kansuh and Szechuan, the rhubarb is grown in mountainous districts. The plants, when grown, are cut down and thrown into heaps, they are then taken to the farmer's house, where the roots are pared and scraped. In Kansuh, the roots are tied together and hung up from poles covered with matting, but in Szechuan the roots are obliged to be dried in the sun, and, as a consequence, are not like those of Kansuh, of firm substance throughout. Rhubarb does not come to Hankow from Sining and Siang-chow at present, and very little comes from Mien-chow. Ph. Journ. Trans., Oct. 18th, 1873, p. 311.

According to Buchheim, whose experiments are substantiated by Kubly, the active constituent of rhubarb is probably analogous to the cathartic acid of senna. Chrysophanic acid, to which Schroff attributed the purgative properties of rhubarb, he has found to be entirely inactive ; the author having taken chrysophanic acid, carefully prepared by him from rhubarb, in doses of 0.250 to 0.5 gramme, without experiencing the least effect. The aqueous extraction of rhubarb therefore represents very completely the activity of the drug. Vierteljahrschr. Ph., 1873, No. 3, pp. 357–359.

The flowers, and nearly or perfectly ripe fruit of a variety of rheum, are used in Turkestan for baths against rheumatism. They are there called Basr-i-Chammos, and At Kulagi, and were found by Prof. Dragendorff to contain abundant iron bluing, tannic acid. N. Rep. Pharm., No. 2, 1874, p. 78.

CHENOPODIACEÆ.

Beta Vulgaris.—The experiments of Scheibler prove that the metapectic acid, obtained by Fremy from beets, does not belong to the pectin group, but is to the contrary arabic acid. This substance is not contained in the beets every year in the same relative quantities, it being some years present in very minute quantities, while in others it is present to such an extent as to interfere with the preparation of sugar. See Arabin in this report. Arch. Pharm., July, 1873, p. 14.

SCROPHULARIACEÆ.

Gerardia Quercifolia, Pursh.—Prof. J. M. Maisch has received from Mr. T. D. Reed, of Meridian, Miss., the root and radical leaves of a plant, which enjoys the reputation as an antidote to snake poison, and was by Prof. Maisch determined to be Gerardia quercifolia. The author is not informed what portion of the plant is used, but infers that it is the root. This consists of a short and rather thin upright rhizome, sending off from eight to twelve rootlets, which are about six inches or more in length, nearly simple, when dry slightly furrowed longitudinally and readily breaking transversely. The fracture is even, somewhat granular, exhibits a thick cortical portion of a dark-gray color, surrounding a thin ligneous centre, of a yellowish color and rather irregular shape. As far as can be judged from the taste, the root probably contains a principle analogous to saponin. Amer. Jour. Pharm., March, 1874, p. 103.

Gelsemium Sempervirens.—Mr. Charles C. Fredigke submitted, at the meeting in Richmond, a paper on Gelseminic Acid and Gelseminia. The author has obtained some interesting results, for which see Proceedings, 1873.

SOLANACEÆ.

Potatoes.—Mr. Hannay had some time ago analyzed the ashes of sound and of diseased potatoes, and found in the latter a considerable increase of potash, sulphuric acid, and chlorine, while the amount of soluble phosphoric acid was less. Mr. Alexander S. Wilson has now analyzed the ashes of diseased potatoes with results, which in the main correspond with the results of Hannay ; but he draws attention to some additional points of difference between the composition of the ashes of sound and diseased potatoes, not pointed out by Hannay, yet of importance to the proper understanding of the causes of decay. These differences consist mainly in a deficiency of magnesia and lime. Different observers state the percentage of magnesia in the ashes of sound potatoes at from 5 to 10 per cent.; the author found in those examined only 3.94 per cent. Mr. Hannay found in sound samples 5.19 per cent. of lime, and in diseased samples considerably less. Wilson found in his diseased sample but 1.77 per cent. of lime.

In conducting his experiments, the author found great difficulty to perfectly cleanse the diseased potatoes from adhering earth, which adheres tenaciously to the tubers, particularly in the eyes, and this is true even of sound potatoes. He found it necessary to cut away small portions of the cuticle, which, differing in its composition from the rest of the root, necessarily but unavoidably, caused some slight inaccuracies. A large quantity of the sample thus treated gave 1.07 per cent. of mineral matter, which had the following composition: Potassium, 44.51; sodium, 0.25; magnesium, 2.36; calcium, 1.12; phosphoric anhydride, 14.48; sulphuric anhydride, 5.57; carbonic anhydride, 15.80; chlorine, 1.37; ferric oxide, 0.53; silica, 2.89; oxygen, equivalent to K, Na, Mg, and Ca, minus equivalent proportion of chlorine, 11.22. Chem. News, Aug. 22d, 1873, p. 91.

Potatoes.—The question, whether germinated potatoes are deleterious to health, is answered by the experiments of O. Bach to the effect, that solania is contained only in the epidermis, and in the sprouts, extending, however, to the roots of the latter in the interior of the tuber. Pharm. Centralhalle, 1873, No. 40, p. 341.

Capsicum.—Buchheim has found that commercial capsicin, which he regards simply as an ethereal extract of capsicum, contains besides fixed oils, probably stearin and palmitin, an oleaginous liquid which, possessing intense acridity, he regards as the active principle, and has named

Capsicol.—The fixed oil was removed by saponifying the capsicin in alcoholic solution, precipitating by chloride of barium, and exhausting the precipitate with ether. The residue consisted of barium compounds of the oily acids, which when isolated were found to be perfectly bland and inactive. The ethereal solution, however, was evaporated, the residue was boiled with alcohol as long as acridity was communicated to it, and upon evaporation an oily liquid remained, which, when purified, by again treating with caustic potassa, diluting with water, precipitating with chloride of barium, extracting with alcohol, and evaporation, constituted pure capsicol. It is brown-red, intensely acrid, and produces upon the skin rapid inflammation. While very sparingly soluble in water it communicates to it, nevertheless, a sharp, burning taste; in alcohol, ether, chloroform, and petroleum ether it is freely soluble. The author did not succeed in depriving it of its color. Vierteljahrschr. Ph., 1873, No. 4, pp. 507–510.

Hyoscyamus Niger.—In reply to a query as to the proper time for collecting hyoscyamus leaves, Prof. Maisch joins the various pharmacopœial authorities in recommending the leaves of the flowering plant during the second year's growth. See Proceedings, 1873.

Tobacco.—Mr. A. Percy Smith has analyzed the ash of (Havana) cigars, and gives the following result: Sulphate of potassium, 7.401; carbonate of potassium, 9.012; chloride of sodium, 3.272; carbonate of sodium, 1.039; sulphate of sodium, 5.764;* sulphate of calcium, 4.180; carbonate of calcium, 45.400; ferric oxide and phosphate, 0.460; phosphates of calcium and magnesium, 9.210; silica, 9.641; carbon, 3.162; traces of alumina and lithian carbonate, and loss, etc., 1.459 = 100.000. Chem. News, Nov. 21st, 1873, p. 261.

OLEACEÆ.

Olive Oil.—The average annual production of olive oil in the Sahil division of the regency of Tunis amounts to upwards of 44,000 tons from about 5,000,000 of trees under cultivation, and with a little enterprise on the part of the inhabitants this production might be very materially increased. About one-fifth of this production enters British commerce, the rest being divided between France and Italy. The crops are unfortunately very much affected by frequent drouths, the absence of natural springs rendering the province entirely dependent upon the rains. The first of these are the winter rains, which predispose the trees to an abundant florescence; the spring rains force the fruit, while any subsequent rains assist in filling it out. Occasionally some of these periodical rains are wanting, at others they are all withheld, when the crops are reduced to a fourth, and even a sixth of an average yield. The olives are gathered in December and January, being collected upon mats or cloths spread beneath the trees. Two kinds of oil are made, the *masri*, which is strong in flavor and smell, and the *drub-el-ma*, which is deprived of both by being passed through water. The mills and presses are very rude in construction, and the manipulation very wasteful, and thus a great deal of oil remains in the dregs, called *fitura*, which is fed to camels. Ph. Jour. Trans., Sept. 13th, 1873, pp. 204–5.

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* See explanation of the author in Chem. News, Dec. 26th, 1873, p. 324.

VERBENACEÆ.

Verbena Bracteosa, Mich.—According to Mr. Buntin, of Terre Haute, Indiana, this plant enjoys in his locality quite a reputation in the treatment of scrofulous affections, particularly in scrofulous sore eyes, and its alterative properties are by some claimed to be more potent than those of iodide of potassium. Prof. Maisch, to whom the information was communicated by Mr. Buntin, gives a description of the plant, and suggests that it merits some attention, particularly with the view of isolating the bitter principle and determining its value as an alterative. The strength of the dose in which the infusion is given has not been communicated. Am. Jour. Pharm., March, 1874, p. 104.

CONVOLVULACEÆ.

Convolvulus Scammonia.—Scammony, sown in the garden of the Faculty of Medicine in Paris a year since, has germinated, and passing through a relatively mild winter in the open ground, this season has been covered with flowers (a very rare occurrence). By its leaves and its corollas of a creamy white color, with pale, dingy rose bands on the outside, it recalls the appearance of *Convolvulus arvensis* (Bindweed). The anthers are remarkable for the rapidity with which, at the moment of opening, they turn outwards their lines of dehiscence, which are primitively introrse. The flowers are at the end of a rather long peduncle, and are sometimes solitary and sometimes disposed in few-flowered cymes. Ph. Jour. Trans., Oct. 25th, 1873, p. 323.

Scammony Root and Resin.—Dr. Hager has found some handsome specimens of scammony root to contain 15 per cent. of sugar, dextrin, and extractive, 3 per cent. tannic acid, and 10 per cent. resin. The resin, which, according to the Germ. Pharm., is prepared like jalap resin, is translucent, brownish-yellow, in thick layers brown, of resinous fracture, and of a sweetish odor. It is completely soluble in alcohol, ether, and chloroform. The author remarks that the British Pharmacopœia states that the resin is emulsionable with water without the addition of an emulsifying agent, and that in his experience this is not the case. In this he is mistaken, at least if Pereira's Materia Medica is a true exponent of that Pharmacopœia, for on page 633, under the head of "Characters and Tests," it says, "It cannot form singly an emulsion with water." The author finds that scammony resin prepared from the root (according to the process of the Germ. Pharm.), owing to the presence of tannic acid, produces a black-violet to violet-brown coloration when sesquichloride of iron is added to its alcoholic solution. Ph. Centralhalle, No. 14, 1874, p. 110.

Jalap, Scammony, Etc.—By his experiments upon the active constituents of jalap, scammony, and other active drugs belonging to the natural order Convolvulaceæ, Buchheim is led to the same deductions as in the instances of the active constituency of euphorbium, mezereon, podophyllin, elaterium, etc. (see these in this report), viz.: *That their active resins are the anhydrides of a peculiar acid modification, into which they are convertible, with more or less facility, when their solutions are heated, and by the action of alkalies.* Under these conditions, the active constituent simply assimilates the elements of water, as they are not oxidized, and no products of decomposition are formed. Vierteljahrschr. Ph., 1873, No. 3, pp. 338–339.

Jalap.—Prof. Baillon states that there has been an abundant flowering of jalap plants in the garden of the Faculty of Medicine at Paris, and that jalap plants, cultivated in botanic gardens, have but rarely flowered. The present occurrence has allowed the verification of the fact that the jalap plant belongs to a species of the genus *Exogonium*, for its corollas are remarkable for a limb perpendicular to the axis of a very long and narrow tube, and its anthers are exserted. Prof. Baillon considers that the specific name should be

Exogonium Jalapa, because the plant was first designated under the name *Ipomœa jalapa* by Nuttall, whilst the epithet "*purga*," now generally employed, was later by several months. It should be remembered, however, that the plant differs from the *Convolvulus jalapa*, which does not produce the true tubercular jalap used in medicine, but an enormous root, not employed in Europe, and much less active. The tubercles of the true jalap grown at Paris have been well developed, having attained the size of a small turnip. It has thus been possible to trace their growth and to ascertain their true origin. They are produced upon subterranean roots in the form of slender cords that very much resemble the so-called roots of couch-grass. Here and there the subterranean axes develop for their nourishment adventitious roots, which descend vertically into the soil; some of these being slender and cylindrical, while others gradually increase in size and become napiform; their upper portions becoming reservoirs of juices, and are gorged amongst other things with the purgative resinous principles. Ph. Jour. Trans., Oct. 18th, 1873, p. 303.

APOCYNACEÆ.

Vinca Minor.—The name of this plant is, according to Stanislas Martin, derived from the Latin "pervinco" (I surmount). Its beautiful azure blue flower, which appears as soon as the snow melts, was to the Romans the symbol of virginity, and is in France known as the magic violet. Bosquillon, Cullen, and Emery, having ascribed medicinal value to the periwinkle, S. Martin has subjected its leaves to analysis, and obtained, besides a peculiarly unpleasant odorous resin, which he extracted by bisulphide of carbon, also a bitter resin, tannin, chlorophyll, wax, and extractive. V. major and V. rosea (from Madagascar) were also found to contain the peculiar odorous resin. Journ. de Connaissançes Méd., 1872; Arch. Pharm., June, 1873, p. 556.

Alstonia Scholaris, *R. Br.* (or *Echites scholaris*, L.).—The bark of this tree, abounding in the Philippines, is called by the natives "dita," and is employed by them, with the best results, in the treatment of the various febrile complaints. C. Gruppe has succeeded in isolating from it an uncrystallizable, highly hygroscopic bitter principle, which he calls *ditaïn*, and which has proven to possess febrifuge powers. Dr. M. Pina, and other physicians of the province of Manilla, who have experimented with this principle, state that it not only replaces quinia completely, but that it acts with greater certainty and rapidity, while the unpleasant after-effects, often observed when quinia is administered, never occur. It was given in the same doses as quinia, and is obtained from the bark by a process similar to that for obtaining quinia from the cinchona barks. Besides 2 per cent. of ditaïn, the bark contains 0.85 sulph. calcium and 10 per cent. extractive. According to W. Hildwein, the tree yields large quantities of the bark, and is not injured by its removal. The bark occurs in pieces of three to six inches long and three to four lines in thickness; is either flat or curved, warty and fissured upon the outer surface, the central portion being covered with lichens. The inner surface is of fibrous structure and of a sepia-brown color; while a transverse section, as also the outer layer, has about the color of raw leather. It is tolerably dense, readily pulverizable, has an uneven short fracture, and its transverse section has a granular appearance. Odorless and feeble, but persistently bitter. Neither its infusion nor decoction (which are clear, and of a light to dark wine-yellow color) produce any reaction with salts of iron. With reference to the active principle, the author is not yet prepared to state that, as obtained by Gruppe, it is a pure alkaloid, but he promises to continue his experiments with larger quantities. N. Rep. Ph., 1873, Nos. 8–9, pp. 561–563.

SAPONACEÆ.

Caoutchouc.—The existence of the india-rubber tree in Upper Burmah does not seem to have been known, or, at any rate, it did not attract attention, until somewhat recently, when three Europeans, Messrs. Miller, Marshall, and Henri, searching for some material to mend a diving apparatus, discovered an abundance of india-rubber trees. Mr. Henri is now employed in tapping the trees and preparing the juice. The estimated number of trees, which are chiefly situated in the Bhamo and Mogoung districts, is 400,000. They thrive best in damp, moist soil, and in a thick forest, shady and cool; attain a height of from 50 to 100 cubits, and a girth of 15 to 20 cubits at the base, with roots creeping over the ground for some distance. They are fit for tapping when from six to ten years old, at which time they are from 15 to 20 cubits in height and 3 cubits in girth. When the time for tapping arrives, incisions are made in the trunks of the trees and in the roots above ground. Hollow bamboo cups, about a foot and a half in length, sloped and pointed similar to a prepared pen, are then inserted in the incision, and receive the oozing juice or milk; three or four hundred of these bamboo receptacles being inserted in each tree. The tapping is continued for about a month, after which time it is discontinued, and the wound allowed to heal. At the expiration of another month the trees have regained their strength, and tapping is recommenced. In the preparation of the india-rubber, the following crude method is observed: Water is boiled in large iron pans, and the juice of the tree is thrown in, when it gradually thickens, and is subsequently dried. Chem. News, Oct. 10th, 1873, p. 189.

STYRACEÆ.

Liquidambar Styraciflua. — A quantity of the balsam of Liquidambar styraciflua, collected in Southeastern Virginia, was subjected to chemical and comparative examination by W. L. Harrison, according to Gmelin's method for the examination of storax, and was found to be identical in its composition with the balsam of Liquidambar orientale; the quantities of the constituents also being the same. He has proven, Mr. William Pryor Creecy's experiments (see A. J. Ph., May, 1860) to the contrary notwithstanding, that it contains cinnamic, and not benzoic, acid. If benzoic acid exists in the balsam at all, it must be in very minute quantity, as all the methods applied failed to detect it. A. J. Ph., April, 1874, pp. 161–165.

Referring to Mr. Harrison's experiments, Prof. J. M. Maisch states that the difference in the appearance of the two balsams, that from Liquidambar styraciflua being clear even when it has become dark by age, while that of L. orientale is of a grayish and turbid appearance, is owing to the difference in the method of obtaining them; the balsam of L. styraciflua being a natural exudation, while that of L. orientale is obtained by boiling the inner bark in water. A portion of the balsam of L. styraciflua, when boiled with water, assumed a gray and turbid appearance similar to that of storax; and, on the other hand, a portion of storax from which the water had been expelled by heat, or on settling by long standing, exhibited two strata, of which the superior stratum assumed a perfectly clear and transparent appearance. Prof. Maisch also draws attention to the advantage of petroleum benzin for the extraction of cinnamic acid, which is extracted along with styracin from the liquidambar balsam. This fact was also referred to by Mr. Harrison. The cinnamic acid is readily separated from the styracin by solution in ammonia, in which the styracin is insoluble. The cinnamic acid may also be removed from either of the two balsams by treatment with hot solution of carbonate of sodium. Ibid., pp. 165–167.

Benzoin Odoriferum, Nees.—The bark of this indigenous shrub, known variously as spice-wood, spice-bush, fever-wood, fever-bush, spice-berry, wild allspice, etc., has been subjected to chemical examination by Mr. J. Morris Jones, who found it to contain volatile oil, possessing the aromatic odor and taste of the bark, resinous matter, extractive, tannic acid, glucose, albumen, and starch. The volatile oil belongs to the cinamyl series, yielding, by the action of oxidizing agents, a product having the odor of oil of bitter almonds. On incineration the bark yielded 2.95 per cent of ashes, which were found to contain oxide of iron, lime, potassa, soda, and hydrochloric and carbonic acids. Am. Jour. Ph., July, 1873, p. 300.

GENTIANACEÆ.

Frasera Walteri.—In reply to a query, "Does Frasera Walteri contain berberin?" Mr. George W. Kennedy's experiments answer in the negative. The author found, however, that the root contained instead gentiopicrin and gentisic acid, the presence of both of which seemed presumable from the fact that the plant belongs to the natural order Gentianaceæ. See Proceedings, 1873.

ERICACEÆ.

Vaccinium Vitis Idæa.—In a previous paper, Dr. Graeger submitted an analysis of red bilberries, according to which they contained 2 per cent. of free acid, which he supposed to be exclusively citric acid. Recent investigation, however, proves that one-fourth to one-third of the free acid is malic acid, but that the amount is not constant, being greatly reduced when the berries are perfectly ripe. As the berries are very abundant in some sections of Europe, the author proposes them as a source of citric acid, which is easily obtained from the expressed juice ; while the sugar contained in it, when converted into alcohol, will so reduce the cost of production, as to constitute the red bilberry the most economical source of citric acid. Moreover, malic acid is likely to come into extensive demand for the manufacture of wine (!), and it may very readily be obtained from the liquid from which citric acid has been precipitated by chalk. The berries contain about 5 per cent. of sugar. N. Jahr. Pharm., 1873, pp. 193–197.

See also "Citric Acid" in this report.

BIGNONACEÆ.

Sesamum Indicum, D. C.—Some seeds from Turkestan were examined in the laboratory of Prof. Dragendorff, and were found, by Harloff, to contain 57.99 per cent. fat, 4.66 per cent. ash, 4.86 per cent. moisture, and 1.33 per cent. nitrogen (equal to 8.6 per cent. protein substances). N. Rep. Pharm., No. 2, 1874, p. 88.

Tecoma Ipé Mart.—The Ipé-tobacco, known in some of the Brazilian provinces as Ipé-assú and Páu santo, has been the subject of chemical investigation by Th. Peckolt, who describes the plant as follows:

The Ipé-tobacco is a many-limbed tree, about 40 to 50 feet high, occasionally 12 feet in diameter. It loses its abundant foliage in June and July, which in August is replaced by such an abundance of flowers that its limbs and branches are completely hidden. The flowers are yellow, but become brown upon removal from the tree, or when they fall off naturally. The bark is strongly fissured and about half an inch thick. The wood is elastic, light brown naturally, but becomes quite dark brown upon exposure to the air, so that the sawdust has the color of snuff, whence its name—Ipé-tobacco. Besides the application of the wood to various industrial uses, among which is dyeing, it is used in the form of decoction in the treatment of the various forms of scabies, while the decoction of the bark is used internally and externally in the treatment of herpetic affections, and as a gargle for angina tonsillaris, and the juice and infusion of the leaves in various ophthalmic affections. The wood being often used as a substitute for lignum guaiaci, the author subjected it to chemical examination, with a view to determine whether such substitution was based upon rational principles. He found it to contain, however, a very large percentage of chrysophanic acid, and therefore regards it a substitute for rhubarb (?) rather than for guaiacum wood. From 1 kilo of the wood he obtained 21.8 grammes pure chrysophanic acid, 37.5 grammes of bitter extractive, and 109.375 grammes of a hard resin, which was readily softened by the temperature of the hand, was odorless, feebly sweet and styptic to the taste, and of a similar color to guaiac resin, from which it differed, however, in not possessing the peculiar greenish tinge, and in all its reactions it was found to be acid; insoluble in water, glycerin, benzin, ether, chloroform, and volatile oils; sparingly soluble in fixed oils; readily soluble in alcohol. It is also readily dissolved by alkaline solution, and from these again precipitated by acids. By the action of nitric acid it seems to be converted into picric acid. Zeitschr. Œst. Apoth. Ver., 1873, No. 31, pp. 549–551.

LOBELIACEÆ.

Lobelia Inflata.—The researches of Prof. J. M. Maisch led him to regard the plant an annual and not a biennial as is usually assumed. The alkaloid, lobelina, being most abundant in the seeds, the herb should be collected during the flowering period, and when a portion of the capsules have become developed. See Proceedings, 1873.

COMPOSITÆ.

Liatris Odoratissima, Willd.—Mr. J. R. Jackson, Curator of the Kew Museum, draws attention to the wild vanilla, which is said to be very abundant in Florida, and is also said to be used for producing many of the flavoring fruit essences (?), perfumes, etc., in America. The leaves, the part used, are mostly selected from the lower part of the plant; are about six inches long by three broad, and are brought into market (English?) in small bales. They are also used for flavoring tobacco and cigars, and for the purpose of protecting woollen cloths from the attacks of moths. Ph. Jour. Trans., Oct. 25th, 1873, p. 322.

Helianthus Annuus.—Mr. M. Chardon describes an oleoresin obtained from sunflowers grown in Algeria. It appears in the form of transparent, colorless drops, upon the extremities of the projecting paleæ and bracts, as soon as the capitulum of the flower is laid bare by the opening of the foliaceous involucre. The substance collected presented the following characters: It is semi-liquid and pitchy in consistence; its odor resembles that of the product of Pinus maritima; has a burning, aromatic, and persistent taste, without any sweetness; exposed to the air, in thin layers, it dried on the surface, and when exposed to heat it gave off essential oil, and left a brittle residue resembling colophony. In boiling water it hardened, and left an opaque resin, and in alcohol it was completely soluble. Owing to the small quantity collected the author could not carry his investigations further. Ph. Jour. Trans., Oct. 25th, 1873, p. 322; Rep. de Pharm., vol. i, N. S., p. 537.

Helenium Autumnale.—Mr. Francis J. Koch has determined the following components of the plant: Malic acid, traces of tannic acid, inulin, albumen, traces of fat and volatile oil, resin, chlorophyll, bitter principle, and coloring matter. The bitter principle, as obtained by the author, was of a liver-brown color, and exceedingly bitter; is soluble in alcohol, ether, and water, and was determined to be a glucoside, splitting, by the action of diluted sulphuric acid, into glucose and an amorphous principle, having acid properties. A. J. Ph., May, 1874, pp. 221–227.

Arnica Montana.—Some years ago Mr. G. F. Walz subjected Arnica montana to chemical examination, and found the root to yield an acid aqueous distillate and a neutral volatile oil. Erlemeyer and Siegel have since repeated the experiments with the root, and find that, while the ethereal oil corresponds with the characters given it by Mr. Walz, the acidity of the aqueous distillate is not due to capronic and caprylic acid, but is due partly to formic acid, and an acid richer in carbon, probably angelic acid, but principally to isobutyric acid. The latter, however, does not seem to pre-exist in the arnica roots, being apparently a decomposition product of an isobutyric ether contained in the volatile oil. N. Rep. Pharm., No. 1, 1874, pp. 1–3.

Hieracium.—A synopsis of the special literature upon the genus Hieracium, and of its illustrations, has been compiled by Dr. Anton Besnard, and communicated by him to N. Rep. Ph., 1873, Nos. 8–9, pp. 551–556.

Lactucarium.—Mr. Thomas Fairgrieve, who for the last sixteen years has had from one to two acres of Lactuca virosa under cultivation for the purpose of collecting lactucarium, read a paper before the Botanical Society of Edinburgh, in which he details his experience in cultivating, collecting, and preparing the juice of Lactuca virosa, and from which the following interesting points are extracted:

The plant, under favorable circumstances, grows to a height of from ten to twelve feet, with a stalk from one to one and a half inches in diameter; the seeds being sown in autumn, and the young plants planted out early in spring. The favorable seasons for collecting the juice may commence about the middle of July, but the collection is more commonly begun in August, when the plants are three to five feet high, with thick, succulent stalks, and the flower-buds just appearing. The collectors cut the head of each stalk, and scrape the flow of juice into their vessels—one person cutting being followed by two collecting the juice. This process they repeat six or seven times a day, each time a new cut being made a little lower down the stalk. The period lasts from six weeks to two months, closing usually about the third week in September. Towards the close of the season the plants become so woody and hard that it is with great difficulty new cuts can be made for the flow of the juice. The cessation of the season for collection is determined by the first frosty nights, the juice then usually becoming of a watery consistence.

The juice collected during the day is by evening changed to a thick, viscid mass, is divided into pieces suitable for drying, and is dried by the influence of fire, regulated in such a manner that about five days is required for complete exsiccation—that period giving the best results. The yield depends very much upon the season, as in rainy months no collection can be made, while in dry, hot seasons the yield of juice is small, although usually of superior quality. Moist, warm weather causes the greatest flow of juice. In some seasons the collecting vessel, of eight or nine ounces capacity, is not more than half filled daily, and in others three such measures full are gathered each day. Generally six such measures, equal to a little over four pounds of thickened juice, yield one pound of solid lactucarium. Including plants of all descriptions, the average yield from each plant is from forty to fifty grains. Pharm. Journ. Trans., June 7, 1873.

Helichrysum Nudiflorum, Less., and one or two other species of helichrysum, are described by Mr. J. R. Jackson as African tea-plants (see Leguminosæ). H. nudiflorum is a common herbaceous plant in the colony, is demulcent in its properties, and is used in form of an infusion in phthisis, catarrh, and pulmonary complaints generally.

H. Serpyllifolium, Less., furnishes "Hottentots'" tea, has an agreeable smell, and is a favorite among the natives. It is said to possess emollient and demulcent properties. The leaves of

H. Imbricatum, Less., constitute the "Duinen-thee" of the colonists—literally Tea of the Downs, in reference to the plant being common on the Cape Downs. It is used in coughs and chest diseases, as are also the leaves of H. ariculatum. Ph. Jour. Trans., Nov. 29th, 1873, p. 421.

Nottonia Grandiflora.—The stems of this plant are used in the neighborhood of Bombay in the form of an infusion as a remedy for the bite of rabid dogs. In six cases, cited by Major Wheeler, five recovered after taking the remedy, while the sixth died, having refused to partake of it. The infusion is made by infusing 4 ounces of the fresh stems in 16 ounces of cold water, and allowing it to stand over night. It forms a slimy, greenish liquid, which is given at one dose in the morning; in the evening a firm doughy mass made with flour and a fresh portion of the infusion is given, and this treatment is continued for three days. Zeitschr. Œst. Apoth. Ver., 1874, No. 8, p. 149; Ph. Jour. Trans., 1873.

VALERIANACEÆ.

Valeriana.—The rhizome of a valeriana has been identified by Prof. Dragendorff as a Turkestan drug called "Aasarum." He found the same drug among the Chinese medicines exhibited at the Vienna Exposition as "kaw-sung." N. Rep. Ph., No. 2, 1874, p. 71.

RUBIACEÆ.

Rubia Tinctorum.—Mr. W. J. Russel, President of the British Association, in his address to the chemical section of that Association, instead of reviewing the progress of chemistry during the past year, reviews the progress of chemistry as far as it is concerned in the history of one substance only, the coloring matter found in madder. The review embraces the history of the use, the production, and of the characters of both natural and artificial alizarin. Ph. Jour. Trans., Nov., 1873.

Trompatilla.—Under this name a sample of a drug has reached Prof. J. M. Maisch, which, in Mexico, enjoys reputation for the prevention and treatment of hydrophobia. It is stated to be obtained from *Bouvardia triphylla*, and consists of short segments of the stem and branches, varying from one-fourth to three-fourths of an inch in diameter, terete, and slightly bent. The bark is thin, fragile, brown, and separates in a few pieces very readily from the wood, but adheres firmly in the largest number. The bark is covered with a comparatively thick layer of soft, friable cork, which is rust-brown within, externally gray to blackish-brown, and marked with numerous shallow longitudinal fissures. The wood is rather hard, but splits easily and straight in the direction of the axis; it shows concentric, somewhat irregular, zones, resembling annual rings, and is radially very finely striate from the numerous, very fine, medullary rays. The duramen has a purplish-gray tint, the alburnum is yellowish-white. There is no perceptible odor to either wood or bark; the former is tasteless, the latter has a slight bitterish taste. The central pith is scarcely a line in diameter, and of a brownish to purplish-brown color. A. J. Ph., Feb., 1874, p. 51.

Cinchona.—Six samples of cinchona bark were recently submitted to Dr. De Vrij by the government of Jamaica, and were found to contain very low percentages of quinia. The following is a tabular review of the quantity in hundred parts of the different barks analyzed:

	Pure quinia.		Crystallized sulphur.	Total of mixed alkaloids.
C. succirubra (cold spring), .	1.958	=	2.50	10.837
C. Calisaya, ...	1.265	=	1.612	2.750
C. Pahudiana, ...	0.964	=	1.229	3.735
C. officinalis, ...	0.46	=	0.586	0.832
C. succirubra, ...	0.463	=	0.59	5.835
C. micrantha, ...	—	=	—	3.402

As the introduction of cinchona cultivation in Jamaica dates only from 1867, the author considers the results of his analysis of the bark obtained in that colony from *C. succirubra*, *C. Calisaya*, and *C. Pahudiana* very satisfactory. By comparison of his results of analysis of the bark of C. officinalis with those obtained from barks of the same species grown in Ceylon and the Neilgherries, he concludes that he has not much confidence in the success of the cultivation of that species in Jamaica. Ph. Jour. Trans., Aug. 16th, 1873, p. 121.

Cinchona Cultivation at Darjeeling (*India*).—The cultivation of the cinchona at Darjeeling is making hopeful progress. The first nursery which was formed on the slope of a spur near Darjeeling, was removed nine years since, by the late Dr. T. Anderson, to a fine valley of 30,000 acres, which runs down to the Teesta River; the broad expanse and varying slopes of the valley affording a remarkable variety of climate. The valley is called the Rungbee, and close to it are the Pomong Gardens of the Cinchona Association of Darjeeling, which last year yielded 36,000 pounds dry bark, and will produce this season 50,000 pounds. The height of 4000 feet is the limit of growth, but the lower plantations are much healthier down to 1000 feet. *Cinchona succirubra* has prospered beyond all expectation on the lower altitude, on which the *C. Calisaya* has also fairly succeeded; but the *C. officinalis* or gray variety, which has succeeded so well on the Neilgherry

Hills, proved a failure here. Of the 3,000,000 plants under cultivation in this valley, more than 2,000,000 have been permanently set out, and some 200 acres of fresh soil are planted annually. The highest tree rises 36 feet, and is 17 inches in girth, while a large number rise from 22 to 30 feet. It is presumed that some 50,000 pounds of bark will be brought into market from this government plantation, and it is inferred that this bark will bring better prices than that from the Pomong Garden, which last year brought only 1*s.* 6*d.* a pound, while that from the Rungbee valley brought 2*s.* This difference seems to be dependent on the fact that the Pomong Company, being a private enterprise, take advantage of the fact that when a five-year-old tree is cut down, several shoots at once spring up, which in four years are each as stout as the old stem. It is calculated that the Darjeeling plantation will during the next three years produce 200,000 pounds of dry bark, and that this will yield 6000 pounds of quinia, and 6000 pounds of other valuable alkaloids. Pharm. Jour. Trans., July 5th, 1873, from Calcutta letter in London Times, June 3d, 1873.

Cinchona Cultivation in Java.—The results of analysis of Java cinchona bark, during the second quarter of 1873, by K. W. Van Gorkom, have been published in his report, and translated by Dr. C. Haskarl into the German (Pharm. Zeit., Oct. 4th, 1873). An extract from this appears in the Pharm. Journ. and Trans. (Nov. 1st, 1873, p. 341), in which the résumé of the analysis, comprising No. 26 to 52 of the barks employed, is contained in tabular form. Among the varieties of *C. officinalis* analyzed, the small-leaved variety is richest in quinia. The opinion that *C. officinalis* would require to be grown at a considerable elevation above the level of the sea, is supported by the analysis, the bark of several varieties of *C. officinalis*, grown at an elevation of 1950 metres, being those containing the smallest amounts of alkaloid.

In a paper upon the "Cinchona Plantations in Java," Mr. J. E. Howard draws attention to the remarkable results obtained by the Dutch government, a recent shipment of

Java barks having been sold at Amsterdam at prices equal to from 8*s.* to 9*s.* 5*d.* per pound ; a price which was not simply paid from such accidental circumstances as will at times occur, but because of the intrinsic goodness of the bark. These results are attributed not only to the acquisition of the best seed, but as well to pursuing a course that, with such seed at disposition, was calculated to lead to such a result. The seed was that collected by Mr. Charles Sedger, in Peru, in 1865, and which was shipped from Arica to London on the 22d of July of that year. It was collected from the trees of the Calisaya seed bark, which after four years' fruitless expectation, were, in 1865, in magnificent condition, and promising for seed. The paper contains much that will be interesting to students of Materia Medica, and especially of the cinchonas. Pharm. Journ. Trans., July 12th, 1873, pp. 21–25.

Remigia Velozii.—The bark, the *casca della quina de remijia* of Brazilian commerce, is by Wiggers classified among the *false cinchonas*, and is, by Dr. A. Vogel, described as follows: The bulk of the sample is composed of small pieces of bark 1.5 to 2 mm. thick, prominently of a fawn color, with strongly wrinkled exterior surface, and with woody splinters adhering to the inner surface. The remainder is made up of cylindrical pieces of root, about 5 to 6 mm. thick, corrugated, ligneous, and covered with a very thin, fawn-colored, longitudinally wrinkled bark. The taste of the bark is strong, persistent, and pure bitter.

The bark was chemically examined by Dr. J. Nowak, who found it to contain iron greening *tannin*, *chinovin* (kinovic bitter), *kinovic*, and *kinovinic acids.* The *chinovin* was obtained in the form of a resinous mass, associated with *kinovic acid.* Subjected to combustion the bark left 12.2 per cent. of ash-residue, which was composed of 7 per cent. of iron ; 21 per cent. of silica, and potassium, sodium, calcium, and magnesium compounds of phosphoric, sulphuric, and carbonic acids, and chlorine. Zeitschr. Œst. Apoth. Ver., 1873, No. 29, pp. 517–520.

UMBELLIFERÆ.

Pimpinella Saxifraga.—Buchheim found it to contain a peculiar, yellowish-white, crystalline principle, which he calls *pimpinellin*, and finds to be the principle to which the acridity of the plant is due. Its acrid taste is, however, not apparent until it is dissolved in alcohol, as it is completely insoluble in aqueous liquids, corresponding in this respect with the *angelicin* obtained by Buchner from angelica root. The author suggests that, inasmuch as the acrid principles of certain umbelliferous roots seem to be very closely allied, comparative experiments would lead to interesting scientific results. (See Pimpinellin in this report.) Vierteljahrschr. Ph., 1873, No. 4, pp. 520–522.

Garganus Thapsiæ.—The active constituent of this plant, which had been used by the ancients extensively in the treatment of disease both externally and internally, has, by Dr. Reboulleau, been found to reside in a resin. It is obtained, according to Godeffroy, from the fresh bark of the root, collected during the flowering period, by drying it, powdering coarsely, and washing the coarse powder with a large quantity of water to remove soluble constituents. The washed substance is then again dried and digested with concentrated alcohol, corresponding in quantity to two litres for every kilogramme of bark, for three days; the mixture is then expressed, and the residue is treated three or four times more in the same manner, the alcoholic tincture obtained being distilled separately to remove alcohol, and then united. The resulting extract is not yet pure "resina thapsiæ," and must be purified by boiling with water, dissolving the residue, and distilling off the alcohol, and repeating this procedure until the water with which the residue is boiled no longer becomes turbid. The resulting resin may still be contaminated with fixed oil, which is removed by saponification, resolution of the residue in alcohol, and distillation to remove that menstruum. So prepared it is the resina thapsiæ, which has been admitted into the Codex for preparing a blistering plaster. Zeitschr. Œst. Apoth. Ver., 1874, No. 3, p. 51.

Osha Root.—A new Mexican umbelliferous root, the botanical origin of which is still unknown, has been subjected to chemical examination by Herman Haupt, Jr., who finds it to contain, besides gum, resin, fixed and volatile oil, an aromatic acid, resembling angelic acid, but which the author believes to be distinct from the latter, and proposes to call oshaic acid. A. Jour. Ph., August, 1873, p. 347.

RANUNCULACEÆ.

Podophyllin.—According to the experiments of Buchheim, that portion of podophyllin resin that is insoluble or nearly so in ether, is inactive in doses of one gramme, and possesses acid reaction; while the portion dissolved by the ether represents all the active properties of the original podophyllin. The resin dissolved by the ether is purified by evaporating the ether; treatment of residue with petroleum benzin to remove fatty and some coloring matter; resolution in alcohol, and treatment with animal charcoal to remove yellow coloring matter; again evaporating, and taking up by ether, agitating with aqueous solution of acetate of lead to remove acid resin contaminating it; filtering, and finally again distilling off ether and drying under the receiver of an air-pump. By this method a nearly colorless, but faint yellowish resin is obtained, which is freely soluble in alcohol and ether, but insoluble in water and petroleum benzin, and is active in doses of four centigrammes. By caustic alkali at ordinary temperature, and more rapidly at a boiling temperature, it is converted into an acid modification, which is very sparingly soluble in ether, is called by the author podophyllinic acid, and is identical with the acid inactive resin above described. The conversion of the active resin, which (like the acrid resin of euphorbium) (see Euphorbium in this report), he regards as the anhydride of the acid resin peculiar to the drug, is also formed without the action of alkali, the change taking place during the extraction and evaporation of its solution. It is therefore almost impossible to obtain the active resin entirely free from acid resin. Vierteljahrschr. Pharm., 1873, No. 3, pp. 333–336.

Mr. Frederick B. Power has made some experiments upon the resina podophylli of the Pharmacopœia, and by them supports the view now so generally taken, that that portion of the resin which is soluble in ether is the active constituent. From 8 ounces of root he obtained by the officinial process, two drachms of resin (= 3 per cent.), which was of light yellowish-brown color, and he found that of 5 grammes of this resin, 4.6 grammes was dissolved by ether. He compared with this five additional samples of podophyllin of commerce, the products of different manufactures, and found these of colors varying between dark brown and bright yellow. He states the comparative solubilities of these resins in a number of menstrua, but the most important is their solubility in ether, which was, respectively, from 5 grammes, 3.95, 2.95, 3.55, 4.2, and 4.3 grammes.

Prof. J. M. Maisch has observed, and had already previously drawn attention to the fact, that resin of podophyllum, so called, is soluble in water, provided a sufficient quantity is used, and this is also proven by Mr. Power in his experiments. He therefore considers that the term resin, applied to the officinal preparation, is a misnomer. By its behavior to water, the constituents of the so-called resin may doubtless be separated from each other, but to this end no experiments have as yet been made. Am. Journ. Pharm., May, 1874, p. 247; Ibid., p. 231.

Anemone Pratense, L.—When pulsatilla is subjected to distillation, the distillate, known in medicine as aqua pulsatillæ, separates upon standing a crystalline and a powdery substance; the latter anemonic acid, and the former anemonin. According to the experiments of Fehling, the acid must be regarded as the hydrate of anemonin; but the conversion of the latter into anemonic acid has heretofore been completely unsuccessful. Fehling found, however, that by the action of dilute alkaline solution, anemonin is converted into an acid, anemoninic acid, and that at the same time a yellow, crystalline substance is formed. Buchheim, who has since experimented, has failed to observe this yellow crystalline by-product, and this is corroborated by the experiments of Löwig and Weidmann. The change into anemoninic acid takes place very rapidly by the action of alkaline solution at ordinary temperatures, and by this change the activity (acridity) of the anemonin is totally destroyed. While the author is not prepared to contend that, as in the instances of the active constituents of euphorbium, mezereon, podophyllum, and elaterium (see these in this report), the anemonin is the anhydride of the peculiar acid into which it is convertible, he nevertheless strongly inclines to believe such to be the fact.

Experiments with extractum pulsatillæ furthermore convince the author, that among the volatile only, are the active constituents of pulsatilla; 8.0 grammes of extract prepared by Merck, having been taken by him without further inconvenience than faint nausea. Vierteljahrschr. Pharm., 1873, No. 3, pp. 339–342.

Anemone Ludoviciana, which had been analyzed by Dr. A. W. Miller, has recently been subjected to further experiments by Mr. Frank E. Miller, who had secured a considerable quantity from the neighborhood of St. Paul, Minnesota, where it seems to abound. The active principle seems to be anemonin, and is obtained by agitating the aqueous distillate of the fresh leaves with chloroform, and allowing the chloroformic solution to evaporate spontaneously. The author's experiments have determined that this principle can only be obtained from the fresh leaves, as he found a portion of leaves which had been kept three months, to be entirely devoid of anemonin. The author has furthermore determined the presence of glucose, pectin, and two resins, and the absence of albumen. Am. Journ. Pharm., July, 1873, p. 298.

ANONACEÆ.

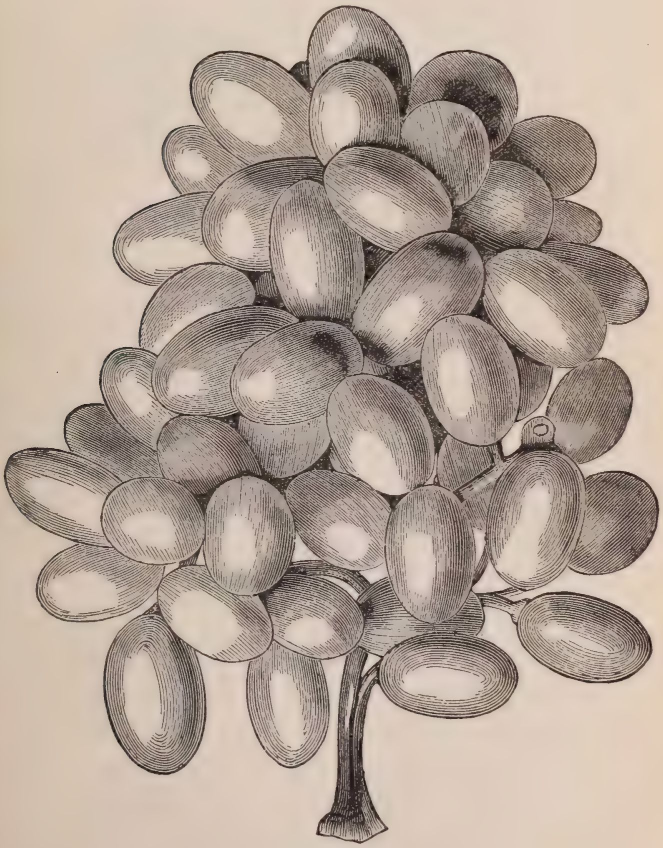
Unona Odoratissima.—The essence of alangilan has been the subject of research by a writer in Compt. Rend. (June 16th, 1874). It is extracted by distillation from the flowers of a tree found in Jamaica; has a specific gravity of 0.980 at 15° C. (= 59° F.); distils over entirely between 160° and 300° C.

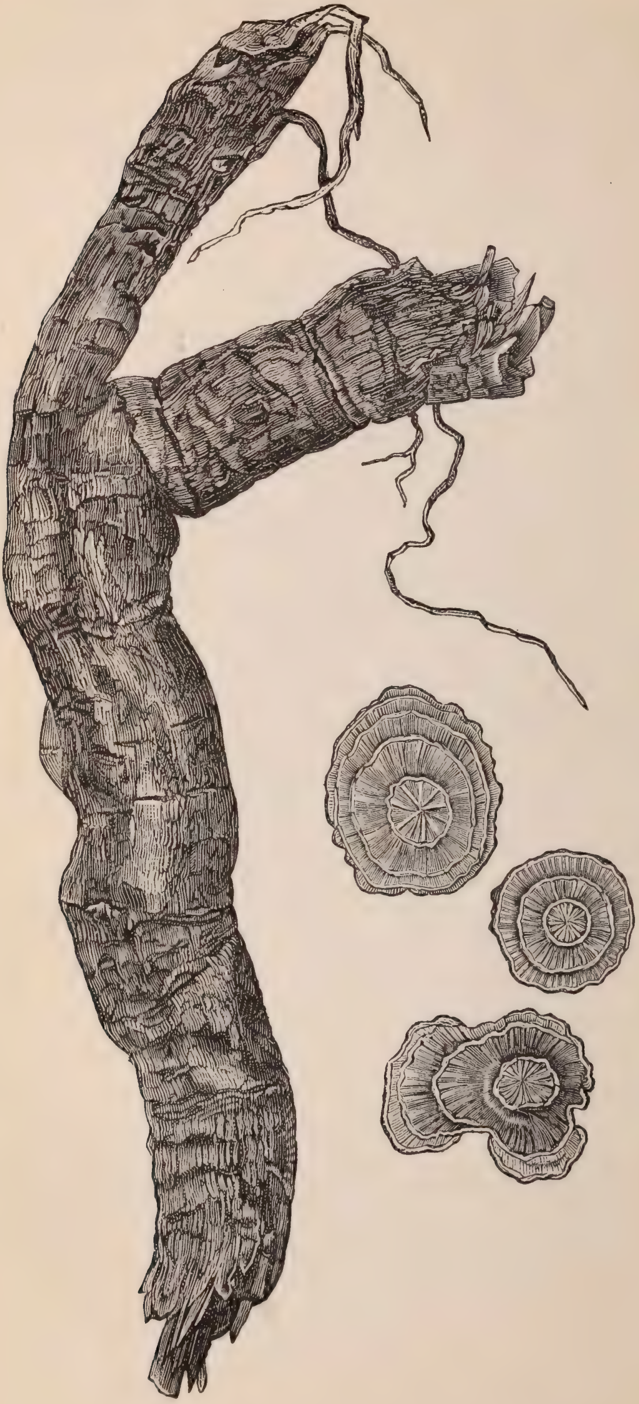
(= 320° and 572° F.) without leaving a carbonaceous residue; is insoluble in water, partially soluble in alcohol, completely soluble in ether, and yields, after partial combination with potassa, benzoic acid. Chem. News, July 11th, 1873, p. 19.

MENISPERMACEÆ.

Pareira Brava.—Mr. Daniel Hanbury's investigations prove beyond contradiction that true Pareira brava is not derived from *Cissampelos Pareira*, Linn., but is derived from *Chondodendron tomentosum* of Ruiz et Pavon. The author, after reviewing the history of Pareira brava, states that he has had opportunity to examine several specimens of true Pareira brava root and leaves, and that by comparison he has found them to agree completely with Sir Hans Sloane's specimens, as well as with Ponset's figure; and has, furthermore, identified it with an authentic specimen of *C. tomentosum* in the herbarium of the British Museum. The raceme of the plant consists of large oval berries, arranged exactly like a bunch of grapes (see Fig. 16); another evidence that it is the plant which the old Portuguese colonists called *Pareira brava* or *wild vine*, neither the fruit nor the foliage of *Cissampelos Pareira* having anything about them suggestive of a grapevine. Geoffreys, in his excellent Tractatus de Materia Medica (tom. ii (1741), p. 21), gives the following description, which the author finds correct as far as it goes: "It is a woody root, hard, contorted, externally of dark color, rough, with many wrinkles, some long, some running around it transversely, like that of *thymelæa* (Daphne gnidium, L.), internally of a dull, yellowish hue, knit together, as it were, with many woody fibres, so that when cut transversely it exhibits several concentric circles, intersected by numerous rays of fibres passing from the centre to the circumference; inodorous, somewhat bitter, with a certain degree of sweetness like licorice, as thick as a finger, or sometimes a child's arm." Mr. Hanbury adds that the numerous specimens he had seen present but little variation. All are portions of a tortuous branching root, wrinkled longitudinally and having transverse fissures, constrictions or ridges. The root is externally blackish-brown, and light yellowish-brown within. In the root of the chondodendron there is a large, well-marked central column composed of wedges diverging from a common axis, around which are arranged a few concentric rings intersected by wedge-shaped rays, which are often irregular, scattered, and indistinct. The axis is not often eccentric. (See Figs. 17 and 18.)

FIG. 16.





FIGS. 17 AND 18.

In *Cissampelos Pareira*, the root and stem are nearly alike in structure, and in transverse section (see Fig. 19) *show no concentric rings*.

Those received from Jamaica, which were the largest that could be collected, were rarely as much as an inch in diameter.

FIG. 19.

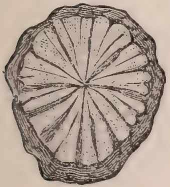
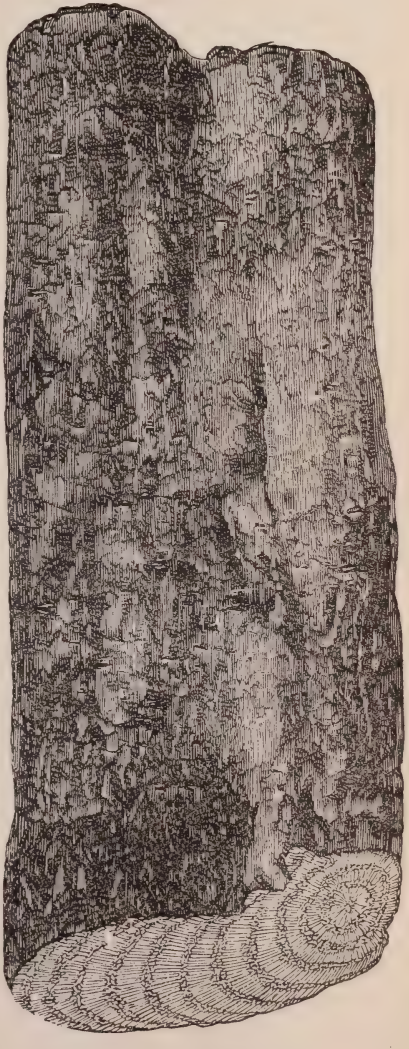


FIG. 20.



The *Pareira brava* of English commerce is mostly of larger size than the root of chondodendron, and is a much more woody substance. Its internal structure (see Fig. 20), familiar to most druggists, consists of a series of layers which are often developed exclusively in one direction. *Nothing is known of its botanical origin*, beyond the fact that the structure of the wood is that of the order *Menispermaceæ*. The author, furthermore, draws attention to the fact, that even this variety of Pareira brava (so called) is becoming more rare, and its place is taken by a drug completely devoid of medicinal power.

It resembles the ordinary, so-called Pareira brava of commerce in its general characters very closely, but differs in the layers being less eccentric, and in having always a distinct central pith. The wood of such is tasteless, and often seems to have been injured by dampness. The author also enumerates a number of other sorts of Pareira brava, which, however, do not seem to enter general commerce. Ph. Jour. Trans., Aug. 2d and 9th, 1873, pp. 81–83 and 101–103.

RUTACEÆ.

Buchu.—Prof. Flückiger has found the leaves to contain besides volatile oil a variety of camphor which, subjected to analysis, was found to be composed of 74.08 carbon and 9 to 10 hydrogen (oxygen not given). The author is, however, not prepared to give a formula of its composition. The volatile oil distilled from Barosma betulina, when separated from the camphor and rectified over sodium, was of composition corresponding to the formula, $C_{10}H_{16}O$. ($O = 16$). The aqueous infusion of buchu leaves contains, besides mucilage, a body which probably belongs to the quercitrins or rutins. The accurate determination requires, however, further investigation. N. Rep. Pharm., No. 2, 1874, p. 102.

ZYGOPHYLLACEÆ.

Guaiacum.—Mr. J. A. Schultz has examined eleven different commercial samples of rasped guaiacum wood, and found them, with a single exception, entirely devoid of resin. The samples were obtained from reputable drug houses in New York, Philadelphia, Chicago, and Milwaukee. As guaiacum wood should contain 26 per cent. of resin, and its activity is due to the resin, it is evident that the present commercial article is worthless, and is either not guaiacum wood at all, or such from which the resin has been extracted. The Pharm., Sept., 1873, p. 282.

Guaiacum, as imported (in England), has by Mr. J. B. Barnes been found very much adulterated. One sample examined contained 14.4 per cent. impurities; another 11.7 per cent. The author suggests the employment of pure guaiacum resin. Pharm. Jour. Trans., Nov. 8th, 1873, p. 361.

VIOLACEÆ.

Viola Tricolor.—The flowers are used in Turkestan in the form of infusion during the first stages of tuberculosis, and in fevers as a diaphoretic. Prof. Dragendorff, in N. Rep. Pharm., No. 2, 1874, p. 71.

CRUCIFERÆ.

Mustard.—To judge from a paper on Mustard by Mr. Thomas Greenish, the use of flour as an adulterant of ground mustard is exceedingly prevalent in England, and its use is sought to be justified—by persons interested of course—by various arguments; some contending that a little flour gives flavor to mustard; others, that it has a tendency to preserve it, and others again, that mustard without flour is too pungent for use. Mr. Greenish suggests that good mustard should and does consist mainly of the flour of black mustard, and should not contain more than 20 per cent. of white mustard. The yellow color is imparted to it by turmeric (as is well known). The name "Durham" is retained by makers to indicate mustard of superior quality. It originated from the fact that a woman, named Clement, of Durham, in 1720, first prepared mustard-flour by grinding, and afterwards dressing the flour. The mustard so prepared received royal favor, and enjoyed extensive sale. Previous to the year 1720, mustard was prepared by pounding in a mortar, and roughly separating the integuments. Pharm. Jour. Trans., Nov. 15th, 1873, p. 381.

Regarding the turmeric in mustard, Mr. W. L. Howie, in a paper on the adulteration of various substances with turmeric, read before the British Pharm. Conference, remarks that its presence in mustard is generally expected, and is not likely to disturb the quality. Ibid., Nov. 1st, 1873, pp. 355–356.

CAPPARIDACEÆ.

Capparis Herbacea.—The seeds, obtained from Turkestan, were subjected to chemical examination in the laboratory of Prof. Dragendorff by Hirschson, who found them to lose 6.82 per cent. of moisture when dried at a temperature of 110° C. (= 230° F.). The ash amounted to 1.79 per cent., and contained 35.6 per cent. of phosphoric acid, = 0.63 per cent. of the seed; 20.76 per cent. potassa, = 0.36 per cent. of the seed; and contained besides lime, magnesia, oxide of iron, and traces of manganese and chlorine. The seed contained 31.77 to 32.02 per cent. of fixed oil; yielded to alcohol 8.75 per cent., of which 7 per cent. was soluble in water, and the remainder, = 1.7 per cent., consisted of resinous matter. The portion soluble in water contains a substance capable of forming vol. oil of mustard, probably myronic acid. The seeds contained besides tartaric, malic, citric, oxalic, and lactic acid, mucilage, 1.8 per cent. nitrogen (= 11.7 per cent. albuminous matter), and 11.98 per cent. of cellulose. They contained no starch. N. Rep. Ph., No. 2, 1874, p. 89.

TILIACEÆ.

Tilia Argentea.—The flowers of Tilia argentea, Desf., have been met with in Europe as a substitute for the flowers of *T. parvifolia* and *grandifolia*, Ehrh. The former species is cultivated in Europe as an ornamental tree; its flowers have larger bracts, which are of a greener color than the officinal, finely reticulate above, and underneath densely covered with stellate hairs, which readily separate when dry, forming a woolly irritating powder; the flowers have, particularly in the fresh state, an odor reminding of hyacinth and lily of the valley. Am. Journ. of Ph., from Pharm. Post., 1874, No. 9.

TERNSTROMIACEÆ.

Tea, Cultivation and Preparation.—In a report upon the pharmacognostic exhibition at the Vienna Exposition, in Zeitschr. Œst. Ap. Ver., 1873, No. 22, some interesting information in regard to the cultivation and preparation of tea in China is given, of which a brief extract is given in the following:

"The tea plant is cultivated in nearly all the Chinese provinces situated between the 27° and 40° lat., but thrives best between the 27° and 33° of lat. Four varieties of the plant are at present designated. 1. *Thea Bohea*, *L.;* 2. *T. viridis*, *L.;* 3. *T. stricta*, *Hayne;* 4. *T. latifolia*, *L.* While in some sections the plant is cultivated upon the declivities of mountains, in others, chiefly northern sections, it is cultivated at their base, not unfrequently immediately adjoining rice fields, and but a few feet above high water. Owing to the constant removal of the leaves, the plant requires copious irrigation, and where this is natural the plant flourishes better than when artificial irrigation is resorted to. Immediately after the removal of the leaves they are spread upon bamboo hurdles in the open air for twelve hours, after which they are well shaken, and exposed in heaps for from one to two hours longer. The leaves are then rolled between the fingers to express the juice, and are then carefully toasted in a pan over a brisk wood fire for five to ten minutes. This is repeated once more, and it is then ready for the final treatment, which consists in *rolling* the individual leaves, *smoking* them, and *assorting* them. Thirty pounds of fresh tea leaves yield from 8 to 10 pounds of smoked tea; 100 pounds of the latter lose by the final drying about 8 pounds, and furnish, when assorted, 10 pounds of stems, 15 pounds powder, and 67 pounds of good tea."

Mr. Alfred H. Allen, in a paper communicated to the British Pharm. Conference, gives the results of his analysis of a considerable number of commercial teas, which had come under his notice in his capacity of public analyst for the borough of Sheffield. After describing the methods pursued for arriving at the results, he gives the results of the analysis of twelve samples, pure and adulterated, in tabular form, showing the *moisture* lost by drying at 212° F.; the *insoluble matter* left after repeated boiling with water; the amount of *gum;* the amount of *tannin;* the amount of thein; and the *colors* and *facings* of each sample of tea examined.

The estimation of tannin in tea, as conducted by different analysts, is found faulty by the author, who pursued the following method, and states that it is correct within one-half of one per cent.: 20 grains of tea is boiled in a flask for half an hour with 3 or 4 ounces of distilled water, the solution is drained off, the residuary leaves are boiled again with a little water, drained as before, and the two liquids are mixed and brought to a measured quantity. One-tenth of this liquid (= 2 grains of tea) is mixed with an equal volume of water in a beaker, and a standard solution of gelatin is added to it, by about 5 grains at a time, with repeated stirring. The precipitate of tannin formed settles readily, when the process is successful, allowing the operator to judge of the operation. When the precipitation is judged to be approaching termination, a small quantity is filtered into a test-tube and tested with a small quantity of the gelatin solution, and this is returned to the bulk as long as a precipitate is produced. Finally a small portion of the filtrate is tested with tannin solution to make sure that the addition of gelatin has not been carried too far. The process is then repeated with one-half of the original tea solution (= 10 grains of tea), and may be again repeated with the remaining quantity (= 8 grains of tea). The standard gelatin solution is made by dissolving 40 grains of Nelson's gelatin in 7000 grains (= 16 ounces) of distilled water, and adding 15 grains of powdered alum, which greatly facilitates the subsidence of the tannate of gelatin. The strength of this standard solution is ascertained by dissolving 5 grains of pure tannin in about 6 ounces of water, and proceeding as with the solution of tea. As it does not keep well, it must be reset every few days, or prepared fresh as wanted. Ph. Jour. Trans., Oct. 25th, 1873, pp. 331–334.

Mr. J. Alfred Wanklyn calls attention to the importance of determining the percentages of ash in tea as a means of determining their purity. Determinations of various samples of tea made by him correspond very closely with the percentage obtained by Zöller from tea leaves of guaranteed purity, 5.63 per cent., as will be evidenced from the following results:

	Percentages of ashes.
Specimen of tea used by the author,	5.63
Civil service tea,	5.56
Horniman's tea,	5.99
Mandarin's tea, 8*s.* per lb.,	5.30
Orange Pekoe, 5*s.* per lb.,	5.84
" " "	6.06
Green tea, 4*s.* 6*d.* per lb.,	5.86
Average,	5.75

These percentages were obtained from ordinary air-dried tea. The proportion in absolutely dried tea is 5.92 per cent. For practical purposes the author considers that a great deal of information may be obtained by determining the relative quantities of soluble and insoluble ash in tea leaves. With the object of rendering a determination of this sort available, the author has made such determinations on dried leaves of various kinds which, with the exception of tea and Paraguay tea leaves, were gathered on the 24th of August, 1873. The following are the results:

	Percentages on the dried leaves. The ash. Total.	Soluble in water.	Insoluble in water.
1. Common tea,	5.92	3.55	2.37
2. Paraguay tea,	6.28	4.22	2.06
3. Beech,	4.52	2.00	2.52
4. Bramble,	4.53	1.84	2.69
5. Raspberry,	7.84	1.72	6.12
6. Hawthorn,	8.05	3.78	4.27
7. Willow,	9.34	4.16	5.18
8. Plum,	9.90	5.66	4.24
9. Elder,	10.67	3.19	7.48
10. Gooseberry,	13.50	7.83	5.67

From this table it is apparent that the ash of Paraguay tea is the only ash capable of being mistaken for the ash of tea leaves, the total percentage excluding all others. The ash of Paraguay tea is, however, distinguished from the ash of the common tea by containing a higher proportion of soluble matter. The determination of the total, the soluble and the insoluble ash in leaves, is made with great facility, and the author gives the method employed by him. Chem. News, Oct. 10th, 1873, p. 187.

The following analyses of ten samples of teas, which were all undoubtedly genuine, are given by Mr. A. S. Wilson. In the table, A represents the percentage of ash; B, the proportion of ash soluble in water; C, that soluble in hydrochloric acid; D, the silicious matters; and E, the amount of peroxide of iron in the ash:

	A.	B.	C.	D.	E.
1. Moning, . . .	6.00	3.15	2.03	0.82	0.05
2. " . . .	5.82	2.73	2.52	0.57	0.07
3. " . . .	5.90	2.76	2.36	0.78	0.07
4. " . . .	5.55	2.66	2.21	0.68	0.09
5. Kaisow, . . .	5.43	3.33	1.88	0.22	0.05
6. Foochow Pekoe, .	6.15	3.20	2.16	0.79	0.09
7. Assam Souchong, .	5.15	2.90	2.05	0.20	0.03
8. Green Assam, . .	5.32	2.94	2.11	0.27	0.08
9. Fine green tea, faced,	7.14	2.38	3.19	1.57	0.12
10. Black tea, mixed, .	5.68	2.86	2.33	0.49	0.04

Chem. News, Dec. 19th, 1873, p. 307.

VITACEÆ.

Ampelopsis Hederacea.—Prof. V. Gorup-Besanez had previously analyzed the leaves of Ampelopsis hederacea, and has now subjected the berries to analysis, which corresponded in the main with that of the leaves. Besides an abundance of tartaric acid and tartrates, glucose, gum, pectinous substance, and oxalic acid, he found pyrocatechuic acid in such quantities that, notwithstanding the small amount of juice subjected to analysis, he was enabled to make all the tests necessary to establish its identity, and was even enabled to make the sublimation test. Glycolic acid was not found; neither was inosit, which Mr. Hilger had found in grape-juice; but owing to the small quantity of material used its absence is not conclusively proven. N. Rep. Ph., 1874, No. 3, p. 180.

PAPAVERACEÆ.

Opium.—Mr. A. Hildwein states that at the Vienna Exposition samples of opium, from all countries producing it, were on exhibition, and gives of them the following description:

Persian Opium.—Persia produces large quantities of opium, which finds a market mostly in the eastern and southern Asiatic countries, and in Turkey. It occurs usually in cylinders, which are wrapped in paper; forms a shining brown-black mass, and contains 10 per cent. of morphia. Its occurrence in cakes is seldom, and in that form has a gray-brown color. The opiums from Masenderan and Yezd are regarded as good; that from Kashan is adulterated with starch.

Russian (Trans-Caucasian) Opium occurs in yellowish-brown, doughy pieces; possessing a saffron-like odor; stains the hands yellow, and is a mixture of opium, saffron, and honey.

Asia Minor is represented by ninety-seven varieties, a portion ball-shaped, and the other, with two exceptions, in the form of more or less flat cakes. The exceptions are Bagdad opium; one sample of which formed a homogeneous black mass contained in a tin-canister, and the other, a cylindrical piece, wrapped in paper. Among these samples there were two which contained no morphia at all, while the samples richest in morphia contained 12.5 per cent.

India is represented by four varieties: Abearee opium, from Benares, of cubical shape, which contains 5–7 per cent. morphia; the Provision opium, from Benares, ball-shaped, containing the same percentages of morphia; and two varieties from Behar and Indor, which have the appearance of an extract, and yield 8–9 per cent. of morphia.

China also exhibits several samples of opium, cultivated in the flowery kingdom. Junan opium occurs in the form of completely dry, brown masses, contained in tin boxes; Setchuan opium in the form of flat, oval, irregular black-brown cakes; Szechin opium, from Shanghai, in the form of square sticks, wrapped in paper; and several other varieties contained in wooden and tin boxes. The morphia strength of these varieties of Chinese opium varies between 3 and 6½ per cent.

Egyptian Opium is represented by samples from Assynth, Esneh, and Achmin, which resemble Turkish opium, and contain from 3 to 10 per cent. of morphia. The culture of the poppy has lately been revived, especially in the Nile regions, and it is probable that good opium will again be obtainable from that source.

Australia is represented by opium from Victoria. It is the product of recent experiments, consists of segments of cakes of brown-black color, and a morphia strength of 4 to 6 per cent.

Algiers exhibits two samples of opium; the product of recent experiments with the Bengal poppy. The morphia strength of these samples is between 6 and 8 per cent., and the experiments with its cultivation seem to be very encouraging.

North America is, or was at the time, not represented, although it is stated that samples are under way.

Europe is represented by various samples of Silesian and Wurtemberg opium, which occur in the form of irregular masses, of a brown-black color, and a morphia strength of 12–15 per cent.; proving that in Europe opium may be produced which will compete with the very best Oriental varieties. Ph. Centralhalle, 1873, No. 35, pp. 297–299.

A new variety of Opium is brought to notice by Mr. P. Carles, who has found it to contain 8.40 per cent. of morphia and 1.10 per cent. of narcotina. It is said to come from Persia, but differs considerably from the Persian opium described by Guibourt; coming in conical cakes, weighing about 440 grammes. It is covered with poppy leaves; is free from rumex fruits, and possesses an odor decidedly different from that of Smyrna opium, and resembling that of green coffee. The consistence was soft like ordinary opium, and quite homogeneous; the color light, and did not increase on exposure. The author's experiments seem to indicate an abnormal percentage of glucose; but the experiments had to be made by fermentation, and, in the absence of reliable points of comparison, were uncertain. A. Jour. Ph., July, 1873, p. 314, from J. de Ph. et de Chim.

Turkestan Opium.—A sample of black opium, Tschakuda, was examined in the laboratory of Prof. Dragendorff, by Hermuth, and was found to contain 13.16 per cent. morphia. Prof. Dragendorff infers that the sample is really an extract, as it contained but 0.21 per cent. of narcotina. N. Rep. Ph., No. 2, 1874, p. 97.

Opium has been collected by E. Almguist from poppies cultivated in the botanical gardens of Upsala, Sweden. It was of a grayer color than the commercial article, but contained, besides 22 per cent. of water, 12 per cent. of morphia. Owing to heavy hail, but a few grammes were subsequently collected, and these, containing the same percentage of water, yielded but 8 per cent. of morphia. Arch. Pharm., Jan., 1874, p. 83; Upsala Läkarefer. Förhand.

Indian Opium.—The opium manufactured in the Himalayas contains 50 per cent. more of morphia than that of the plains of India. The poppy being exclusively grown for the Supreme Government of India in Benares and Behar, the permission of the Lieutenant-Governor of Bengal has been sought and obtained on the subject of improving its cultivation. Amer. Jour. Pharm., Oct., 1873, p. 471, from Ph. Jour. and Trans., July, 1873.

Spanish Opium.—Messrs. Menchero and Albareda have, according to "El Pabellon Medico," 1873, exhibited at the Vienna Exposition samples of opium, which were collected from varieties of poppy, cultivated by Albareda. The latter has found them to contain 12 per cent. morphia. Zeitschr. Œst. Ap. Ver., 1874, No. 5, p. 85.

California Opium.—A sample of opium, raised in Sutter County, on the Sacramento River, has reached Prof. J. M. Maisch from Mr. J. H. Flint, of Marysville, Cal. The latter found it to contain, in the fresh state, 7.75 per cent. of morphia and 52 per cent. of matter soluble in water. It lost 17 per cent. on drying, and its morphia strength, 9.34 per cent., when dry, therefore, corresponds very nearly to that of the Pharmacopœia. The opium received by Prof. Maisch was more homogeneous in texture than Smyrna opium, of a good strong narcotic odor, and unexceptionable in its physical properties. Amer. Jour. Pharm., March, 1874, p. 105.

The importation of opium into the Japanese Empire, in any of its forms, has heretofore been prohibited, but is now permitted for medicinal purposes. The concession is, however, only made to the apothecaries, and the drug is subject to strict examination by the Government. N. Rep. Ph., 1873, No. 10, p. 640.

Soubeiran, in his "Traité de Pharmacie théorique et pratique" (1857, I, 177), has pointed out that the proportion of water put into contact with crude opium, exercises an influence upon the solution of the resinoid principle, oil and narcotina, but that the resulting modifications of this action are little known. The experiments of L. Périer prove that at any rate the proportion of water employed plays an important part in the solution of extract of opium, and the author sums up the conclusions arrived at as follows:

(1.) The quantity of distilled water at 15° C. (= 59° F.), in which extract of opium is dissolved, has a direct and certain influence upon the partial elimination of the resinoid matter.

(2.) Concentrated aqueous infusions of extract of opium do not give any notable precipitate, except with the lapse of time; dilute solutions, where the weight of the menstruum exceeds twice that of the matter dissolved, give as much more residue as the proportion of water is increased from two to ten.

(3.) Water, in whatever quantity, does not precipitate the whole of the resinoid matter; a certain portion yields only to ammonia.

(4.) The residue of extract of opium treated with cold water redissolves in the concentrated mother solution; and heat, instead of aiding in the separation of the resin, oil, and narcotina, reconstitutes the homogeneity of the extract. Pharm. Jour. Trans., Oct. 11th, 1873, p. 281, from Bull. des Trav. de la Société de Pharmacie de Bordeaux.

Morphia Determination in Opium.—The most simple and accurate method for the determination of morphia in opium is, according to E. P——s, the method of Hager-Jacobson, which consists in boiling the opium with milk of lime, precipitating the morphia by treatment with muriate of ammonia and ether, collecting the precipitated morphia upon a filter, washing it with water, and drying. According to Jacobson, the dry morphia is first washed with chloroform before the final weighing, and he asserts that no morphia, in that condition, is taken up by the chloroform. As pure morphia is soluble in about 100 parts chloroform, the author has made experiments which prove Jacobson's assertion to be correct. He draws attention, however, to a slight source of error, occasioned by the washing of the precipitated morphia with water. Morphia being soluble in 1000 to 1200 parts of water, the error will be greater or less, according to the quantity of water used. This error he proposes to compensate by calculating for every 1500 parts of water used 1 part of morphia, in addition to the result obtained by weighing. Ph. Centralhalle, 1873, No. 29, pp. 246–247.

C. Arnoldi communicates the following practical method for assaying opium, which he finds practical, and which he has found to be reliable. The method is the one described in the Russian Military Pharmacopœia: 500 grains dry opium is macerated in 3 ounces of distilled water, and the liquid is decanted after 24 hours upon a weighed filter; the residue is again macerated for 24 hours in a like quantity of water, and the whole is then thrown upon the filter and washed with water until the washings pass colorless and are no longer bitter. The contents of the filter should not weigh more than 200 grains; in case they do, the opium contains insoluble admixture. The filtrate is now concentrated on a water-bath to 5 ounces, allowed to cool, filtered, agitated with about 6 drachms of purified animal charcoal, again filtered, and the charcoal carefully washed with water. The liquid is then treated with a slight excess of ammonia, and is allowed to stand in a warm place to facilitate the evaporation of the excess of ammonia and the deposition of the morphia. This is collected upon a weighed filter, washed, dried on a water-bath, and weighed. Good opium should yield 14–19 per cent.

of impure morphia, corresponding to 10–13½ per cent. of pure morphia.

Arnoldi had obtained 10 grains of purified morphia by dissolving 19 grains of impure morphia, obtained as above described from 125 grains of opium, in alcohol and crystallizing. E. Rennard (Ed. Pharm. Zeitschr. f. Rus.) describes this as light grayish-yellow, crystalline, and completely soluble in alcohol and acids; it contained, however, 1 grain (in 10 grains) of narcotin. He therefore suggests that the impure morphia obtained by the above method, be first shaken with ether, to remove narcotin, before treating it with alcohol. Ph. Zeitschr. Rus., 1873, No. 21, pp. 641–643.

The criticism of an author, in Ph. Centralhalle, 1873, No. 29, upon the definition of the morphia strength of opium by the Pharm. Germ. is noticed here, because it applies with the same force to our own standard. Opium, varying in strength from 3 to 20 per cent. of morphia, it is eminently proper that a maximum, as well as a minimum, strength of opium should be defined. It may be true that commercial opium is, as a rule, not above the standard, and to the contrary, rather below; and it may also be that pharmacists, as a rule, will pay the same disregard to the strength of opium above the standard as they, unfortunately, do to the strength below. But a work, that professes to be the standard, according to which we are morally bound to prepare the preparations demanded by the physician, should not leave so important a matter without decided definition. If the revisers of our Pharmacopœia intend to imply by their definition that opium should contain 10 per cent. of morphia, no more and no less, they certainly failed to do so when they define "opium, when dried at 212° until it ceases to lose weight, should yield at least 10 per cent. of morphia by the officinal process."

CACTACEÆ.

Cactus Opundica.—The fruit of this cactus is of great importance to the Arabian inhabitants of Algeria, using them as food almost exclusively, from July to October. The plant abounds in the wild state, is cultivated and propagated with ease, and is often used to form hedges. Two varieties of the plant exist, the one having longer thorns than the other. The fruit, called by the Arabs *Kermous-el-nesara* (the fig of the Christians), and by the French, *Figue de Barbarie*, is of the size and form of a small, thick cucumber, and contains a palatable sweet substance, which may be readily removed from the prickly envelope. Zeitschr. Œst. Apoth. Ver., 1873, No. 15, p. 278.

CUCURBITACEÆ.

Elaterium.—Buchheim has by his experiments determined that elaterin is, by the action of alkaline solutions in the cold, and more rapidly at a boiling temperature, converted into an acid modification, and that, while in its unchanged condition it is active in doses of 0.004 gramme, he has taken it in doses of 1.0 gramme in its acid modification, without experiencing the least effect. He regards the elaterin, as he regards the active resins of euphorbium, mezerium, and podophyllum (see these in this report), as the anhydride of the acid, in which it is so readily convertible, and calls the latter elaterinic acid. The author has furthermore found that the conversion of elaterin into the acid modification takes place by the influence of heat alone, and this, he opines, explains sufficiently why the extract of elaterium (Elaterium nigrum) in use in Germany has fallen into discredit, while the elaterium prepared in England enjoys there unchanged popularity. Vierteljahrschr. Pharm., 1873, No. 3, pp. 336–338.

MYRTACEÆ.

Eucalyptus Globulus.—In a compilation, embracing the literature of this interesting plant, Dr. Herman Köhler gives in a condensed form the substance of what was known at the date of the compilation in regard to it. The paper embraces the botanical history of the plant; the acclimatization experiments that have been made; the uses to which the different parts of the plant are applied in medicine and the arts; the characters both physical and chemical of its oil, the leaves, the bark, etc.; and the pharmaceutic preparations that are made from them. The paper is of value to students who are interested in the subject. Arch. Pharm., Aug., 1873, pp. 126–146.

A history of the acclimatization experiments of E. globulus in Algiers and France is given by Ullersberger, in N. Rep. Pharm., 1873, No. 6, pp. 346–348, from which it appears that the seeds of this tree were first sent by Ramel to Paris in 1856–60; that Lambert first introduced them in forest culture in Algiers in 1867; that the region of Tell in Algiers promised to be the most appropriate region for its propagation, and that this presumption has been completely justified. N. Rep. Pharm., 1873, No. 6, pp. 346–348.

According to V. F. Benett Statford, the blue gum tree thrives well in some portions of England, and is readily acclimatized. One of the trees raised by him from the seed is now, after five years, 30 feet high, and prospers in the open air. For the first three years it was necessary to keep the young trees during winter under roof, but during the fourth and fifth year simple wrapping of the lower part of the trunks with straw or hay was sufficient. N. Rep. Pharm., No. 1, 1874, p. 52.

The cultivation of the blue gum tree in various miasmatic regions, the Cape of Good Hope, in Algiers, Cuba, etc., seems to have given conclusive evidence of its value in destroying or neutralizing miasmatic effluvia. The swamp fevers of Cuba have disappeared wherever it has been cultivated. The same is true of the miasmatic districts of the Cape Colonies, and in the neighborhoods of Pardock, and Constantine, Algiers, where the blue gum tree has been extensively cultivated. Ibid., p. 51.

Bertholetia Excelsa.—The Brazil nut has been analyzed by B. Corenwinder, the experiments being made with nuts in the fresh state, with the following results:

Water,		8.00
Oil,		65.60
Nitrogenous matter,		15.31
Non-nitrogenous organic matter,		7.39
Phosphoric acid,	1.35	3.70
Lime, potash, silica, etc.,	2.35	
		100.00

In Brazil and Guiana an excellent edible oil is extracted from the fresh Brazil nut; it is possible, however, that the facility with which these nuts turn rancid, has helped to deter European manufacturers from attempting to utilize them for such a purpose. But even if it were not possible to procure supplies of nuts sufficiently fresh for the purpose in Europe, the author considers an oil might be obtained from this source suitable for the manufacture of soaps and other industrial purposes; while the oil-cake might advantageously be used as manure or perhaps as food for cattle. Pharm. Journ. Trans., Aug. 2d, 1873, p. 86, from Journ. Pharm. Chim., xviii, 14.

ROSACEÆ.

Amygdalus Persica.—The bark of the peach tree has been the subject of chemical experiment by Mr. J. Howard McCrea, who found it to contain tannin, albumen, starch, gum, lignin, resin soluble in alcohol and insoluble in ether, fat, extractive, potassium salt, and, in the cold infusion, hydrocyanic acid. A bitter principle, which doubtless exists, was not isolated. The tannic acid is present in large quantities. Am. Jour. Ph., July, 1873, p. 302.

Rubus Idæus.—The researches of Prof. Areschong render it highly probable that the raspberry, instead of being of European origin, is really of American origin. Our native red raspberry, *R. strigosus*, is so near the cultivated raspberry (an importation from Europe) that specific distinctness has been in doubt, and specimens from British America and the Rocky Mountains certainly occur which a botanist must needs refer to *R. idæus* itself. Prof. Areschong makes prominent and important the fact that *R. idæus* has no near relative, or, in other words, is the sole raspberry in Europe, but in mode of growth, in the bark, etc., as well as in the fruit, accords with American species, with one of them so closely, that all who have come to the conclusion that species have a history, must needs infer a community of origin. Am. Jour. Pharm., July, 1873, p. 327, from Am. Jour. Sci. and Arts.

Cliffortia Ilicifolia, L., and other species of this genus (of which there are about forty), is described by Mr. J. R. Jackson as an African tea plant (see Leguminosæ), the leaves of which are used at the Cape of Good Hope, under the name of "Doorn-thee," as an emollient and expectorant in coughs. The various species are bushes (all natives of South Africa), with small alternate leaves, composed of two or three leaflets, and when the species has three leaflets, the two side leaflets are small and united more or less to the centre one. The flowers are small, diœcious, and produced in the axils of the leaves. Both the male and female flowers have the calyx tube contracted at the top, the former containing about thirty stamens, and the latter one or two achenes, each surmounted with a bearded or feathery style. Ph. Jour. Trans., Nov. 29th, 1873, p. 421.

Rosa Damascena—Attar of Roses—The following is extracted from a report on the Rose Harvest for 1873 in the villages of Adrianople, by Mr. Vice-Consul Dupuis:

"Owing to evil weather and a cloudy spring the harvesting, which usually commences early in April, did not commence till near the end of May. A high temperature in April will cause the rose buds to develop early, chilly weather retarding the blossoming until milder weather sets in. In cloudy or wet seasons the rose plants blow gradually and harvesting lasts about a month, when the gathering is rendered easy, and the operations of distillation are conducted with care and attention; whereas when the weather is dry, only half the time is occupied, and distillation is more rapidly proceeded with. The advantage of a damp over a dry season consists in a greater yield of oil, which seems to be, however, less strong (?); 1½ drachm of oil being obtained from 22 to 24 pounds of blossoms collected during a damp season, while 38 to 44 pounds, collected during a dry season, will barely yield that quantity. The mode adopted for testing the purity of the different qualities of these oils is to put them into flasks, which are afterwards immersed in water at a temperature of 63° to 68° F., when, if the quality be good, it will freeze;

this oil is preferred to all others as being the purest kind. A strong, sandy ground, impregnated with oxide of iron, is said to favor the growth of the plant, and produces oil of the best quality; while hard, unmixed land will only yield oil of an inferior kind." Ph. Jour. Trans., Nov. 29th, 1873, p. 126.

LEGUMINOSÆ.

Toluiferum Balsamum—Balsams of Tolu and Peru.—Prof. Baillon expresses the opinion that the plant which yields the balsam of tolu, and has been described as *Myroxylon toluiferum*, should retain the name given it by Linnæus, *Toluiferum balsamum.* The author also contends that *Myroxylon peruiferum* is erroneous for the plant which yields the balsam of Peru, as the tree which yields the San Salvador balsam is that which was named by Klotzsch, *Myroxylon Pereiræ;* this cannot, however, be separated specifically from *Toluiferum balsamum*, and the different qualities of the balsams seem to depend entirely upon the method of extraction. Ph. Jour. Trans., Nov. 15th, 1873, p. 382, from Rép. de. Pharm.

Balsam of Tolu.—P. Carles obtained the acid from soft and hard tolu balsam by digesting it with water, and cooling. After recrystallization from alcohol and water, the nature of the acid was determined volumetrically, and the figures 147.85 and 148.40 were obtained for the acid as obtained from hard and soft tolu respectively. The combining weight of benzoic acid, $C_7H_6O_2$, being 122, and that of cinnamic acid, $C_9H_8O_2 = 148$, the author concludes that tolu balsam contains only cinnamic, but no benzoic acid. Am. Jour. Pharm., from Jour. de Pharm. et de Chim., Feb., 1874, 112.

African Tea Plants.—Cyclopia Genistoides, and other species, are known in certain African localities as tea plants, according to J. R. Jackson, by whom the genus is characterized as follows: The leaves are alternate, sessile, and trifoliate, the leaflets linear, smooth or pubescent, their margins frequently revolute; the flowers are yellow, papilionaceous, stalked, and bracteate, and are mostly borne in the axils of the upper leaves. Round the pedicle at the base of the calyx is a circular depression, a character by which the species may be recognized from their allies. The fruits are compressed oblong pods, bearing numerous seeds. The genus consists of nine species, mostly shrubs or bushes, which are natives of South Africa.

C. Genistoides, Vent., is known at the Cape as bush tea, the leaflets being used for that purpose. Other species are undoubtedly used for the same purpose. The tea has a strong aroma resembling Chinese tea, and a sweetish astringent taste. It is used medicinally for assisting expectoration in chronic catarrh, and also in consumption. Another genus of the same family,

Borbonia, consisting of thirteen species, all natives of South Africa, is used for tea, the infusion of the leaflets being known to the colonists as "stekel-thee." The various species are characterized as follows: They are shrubs, with compressed, angular, winged branches, and alternate, many-nerved leaves; papilionaceous flowers, yellow, and borne in terminal or axillary racemes; linear pods somewhat flattened, and are mostly covered with long, soft hairs.

B. Parviflora, Lam., is the species mostly used, the leaves of which are given as a diuretic in the form of decoction. (For other African tea plants see Rosaceæ, Compositæ, and Amyridaceæ in this report.) Ph. Jour. Trans., Nov. 29th, 1873, p. 421.

Licorice Root, which abounds in every portion of Anatobia, is, according to J. M. Stöckel, collected late in fall or the so-called rainy season; is dried in spring; assorted according to size; formed into bundles, the ends of which are tied over with packing cloth, and in this condition is exported to England, Germany, Holland, and America. The export from Smyrna is, however, irregular, the products of Sicily and Spain being preferred. This is, however, not so much owing to inferiority in quality as to the carelessness in assorting, and consequent irregular condition of the packages; and also to loss of weight occasioned by transportation (drying).

Extract of Licorice is exported from Smyrna in solid masses, weighing, boxed, 2½ cwt., and is always a remarkably pure extract. It is obtained by boiling from the smaller and refuse pieces of root, and upon analysis has proved to consist of 63.30 of pure extract, 4.20 vegetable substance, 9.10 ashes, 23.40 water. The formation of the extract into sticks has been tried, but failed to be satisfactory because of its purity, owing to which it was devoid of the necessary adhesive qualities, and the manufacturers find it undesirable to add adhesive matter. The export is chiefly to England and America. N. Rep. Ph., 1873, No. 6, p. 374.

Ervum Lens.—V. Gorup-Besanez has found the fresh juice of lentil germs to contain, besides asparagin, also leucin. The juice of lentils, germinated in garden earth in the dark, was deprived, as far as possible, from albuminous substances by boiling and dialysis. After crystallizing out the asparagin, the mother liquor separated a granular (globular) substance, which, when dried on gypsum tiles, was readily dissolved by boiling alcohol of 75 per cent., and separated on cooling in the globular form so characteristic of leucin. This it was determined to be by appropriate reagents, and the author considers the fact of its presence of sufficient importance to continue his experiments, primarily, with a view to determine whether it is constantly present in germinated lentils. N. Rep. Ph., No. 3, 1874, p. 141.

Arachis Hypogæa.—According to Falières the manufacture of arachis (groundnut) oil has progressed to such an extent that it is now obtainable as a white, bland, tasteless article, which is, commercially speaking, neutral. Perfumers (in France?) make large use of it in the manufacture of pomades, cold cream, etc.; it is a perfect type of a non-drying oil, absorbs relatively small quantities of perfume, requires the least wax, spermaceti or stearin for its solidification, and, finally, may be kept almost indefinitely without becoming rancid. The author promises at some future time to show in detail the advantages that may be obtained from the use of groundnut oil in a large number of pharmaceutical preparations. He has had occasion to make a comparative investigation of pure olive oil and of groundnut oil, and found it to possess great aptitude for the nitric solidification, and hence prefers it to olive oil in the preparation of the unguentum hydrargyri nitratis of the Codex. (See Cerates and Ointments in this report.) Ph. Jour. Trans., June 28th, 1873, from Bull. de Trav. de la Soc. Ph. de Bordeaux.

Senna.—In his elaborate paper upon the so-called "acrid substances" of the Materia Medica, Buchheim reviews the results of various investigators. The experiments of Kubly, to which he gave the incentive, he regards as the most important, and, while they are not completely satisfactory, they have pointed out the way which must lead to the eventual determination. The author regards Tinnevelly senna as the most active commercial variety, and states that when it is carefully exhausted with alcohol, its odor, taste, and coloring matter are completely removed, leaving the residue unimpaired in purgative qualities. Senna leaves so exhausted form a bland, tasteless infusion, which may be given with coffee, especially to children, without the possibility of detection. The alcoholic extract was found by the author to be absolutely inactive. Vierteljahrschr. Ph., 1873, No. 3, pp. 352–357.

An interesting effect by senna upon the urine of persons is noted by Dr. Gubler. The urine of persons who have taken senna becomes of an intense yellow color with a green reflection, just like the urine of jaundice, but nitric acid shows that bile has nothing to do with this coloring. If a fragment of caustic potassa is allowed to fall to the bottom of a tube containing urine colored by senna, a magnificent purple color is produced, while in that colored by jaundice nothing of the sort takes place. On the other hand, urine colored by senna is incapable of assuming the variable rose color which normal urine assumes under the influence of nitric acid. The author assumes that the peculiar color and reaction of such urine are owing to the presence of chrysophanic acid, having observed similar, but not as decided, color reactions by means of rhubarb. Med. News, October, 1873, p. 165, from Med. Times and Gaz., August, 1873.

Copaiba has, by Prof. E. S. Wayne, been found adulterated with castor oil. It was found to be of denser consistence, but of a somewhat lighter color than the true copaiba, but neither in taste nor smell could any difference be detected. Petroleum benzin was found to be the most ready agent for the detection of the adulterant; copaiva forming a clear solution, while, when castor oil is mixed with it, a milky mixture is formed, from which the castor oil separates on standing. A. Jour. Ph., July, 1874, p. 326, from Cin. Lancet.

Australian Acacias.—The species of acacia indigenous to Australia are of greater celerity of growth than the African gum acacias, and many of them yield an abundance of soluble gum, which has already been exported for cotton printing, adhesive purposes, and other applications. Gum, a good deal resembling gum arabic, is obtained from *A. harpophylla*, Ferd. Müller; *A. Bidwilli*, Bentham; *A. pycnantha*, Bentham; *A. decurrens*, Willdenow; and *A. homalophylla*, Cuming. A. J. Ph., Oct., 1873, p. 471, from Jour. Appl. Science, Sept. 1st, 1873.

Gum Arabic.—An adulteration of gum arabic with dextrin has been noticed by Dr. Hager, who detected the latter, which was present in pieces of about one-half the size of a lentil, by aid of a mixture of equal volumes of distilled water and solution of perchloride of iron of sp. gr. 1.480 to 1.484. Such a mixture will dissolve the gum arabic readily, while the dextrin is but little affected. If, therefore, the fragments of adulterated gum arabic are just covered with the mixture above named, the pure gum will adhere to the bottom of the vessel after it has stood for one-half to one minute, while the dextrin fragments are, upon agitation, readily removed. Ph. Centralhalle, 1873, No. 24, p. 201.

Powdered Gum Arabic.—Hager suggests that gum arabic should not be exposed to a greater heat than 30° C. (= 86° F.), and not longer than twenty-four hours, as when exposed too long and at too high a temperature it is changed, acquiring reducing action upon alkaline solutions of copper, and is less rapidly soluble in water. The demand for fine powder, however, necessitates that the gum should be dried at a higher temperature and for a longer time than is desirable, and he therefore suggests that a moderately fine powder be used for solutions and emulsions instead of the finer grade. Ph. Centralhalle, 1873, No. 29, p. 242.

Gum Senegal.—From an extract of a memoir "On the Collection of Gum Senegal in Senegambia," by Dr. Beranger Féraud, the following interesting points are condensed: The gum is yielded by several species of acacia (A. Arabica, A. Seyal, A. Verek, A. Adansonii), and it cannot be pretended that all the species are yet known. These gum trees grow in the Sahara regions, and are cultivated by Moors and some black tribes, who carry the product to the various markets scattered along the banks of the Senegal. The trees also grow spontaneously in many parts of Senegambia, especially on the right bank of the Senegal; it is there that the forests of gum trees occur, if such a term can be applied to the very thinly sown agglomerations of these trees. The forests from which these products are sent into Senegambia are three in number: (1) that of Alfalak, or Afatak, which is about fifteen leagues from the river, opposite Podor, and extends to Lake Coyar, occupying a large portion of the country to Brakna; (2) that of Liebar, or El Ebiar ("the wells"), thirty or forty leagues from the river. in the country of the Darmancour Moors, and containing many small, red gum trees (A. nilotica); (3) that of Sahel, in the territory of Tararza Moors, the product of which is carried to Gahé, the product of the latter forest (of white gum trees) being carried to Portendick, and supplies the demands of English traders.

The first collection of gum commences in October, and the collection is very laborious, for the forests abound in climbing and prickly plants, so that the trees are not gained without infinite trouble. The tears of gum, which collect in balls of varying size, are removed by means of long sticks crooked at the end. The first collection ends in December, the second commences in March, and is more abundant, as the winds have been stronger and more prolonged during the year, by which the branches, previously distended by the humidity of the rains, become more thoroughly dried, and crack more deeply in a greater number of places. From two and a half to three million kilogrammes are exported annually. Ph. Jour. Trans., August 30th, 1873, p. 166; L'Union Pharmaceutique.

MELIACEÆ.

Azadirachta Indica, Juss.—The bark of this tree, well known in Madras, where it is called the *nim tree*, is used quite generally throughout India as a tonic and febrifuge. Besides the bark, the pinnate leaves and the roots are employed for various medicinal purposes. The taste of the bark being intensely bitter, and especially so the inner layer, or liber, Mr. J. Broughton has determined the bitter principle, and found it to be a *neutral resin*. This is obtained by exhausting the bark with spirit of about 60 per cent., precipitating the filtered tincture with water, dissolving the dried precipitate with benzole, again evaporating, dissolving in bisulphide of carbon and evaporating. then with dry ether and evaporating, and, finally, with absolute alcohol and again evaporating So purified, a dark-brown, somewhat soft, resin is obtained, possessing an agreeable smell resembling that of the bark, which is slightly soluble in water, and entirely soluble in the foregoing solvents, but not in fixed oils. It is dissolved by strong boiling alkaline solutions, from which it is precipitated by acids, but, apparently, in an altered state. Strong sulphuric acid likewise dissolves it, and seems to alter it. Its dilute solutions are strongly bitter, but not disagreeable; it fuses at 92° C. (= 197.6° F.), and is composed of $C_{36}H_{50}O_{11}$ ($O = 16$). No peculiar alkaloid is contained either in the bark or leaves. The author obtained from the solution of the resin in absolute alcohol—obtained as abovementioned—a minute quantity of tasteless crystals, which contained only C, H, and O, and seem to have the general characters of a crystalline fat. Water distilled from the bark has the odor of the tree (that of a sulphuretted oil), but no oil was perceptible, though it has the power of decomposing permanganate of potassium. Ph. Jour. Trans., June 14th, 1873, p. 992.

CELASTRACEÆ.

Catha Edulis, Forsk., is, according to Mr. J. R. Jackson, used in Arabia largely as tea, under the name Kât, and is confined, as far as its African habitat is concerned, to the eastern part of the continent. The twigs, with the young leaves remaining, are very extensively collected in Arabia, and form an important article of trade among the Arabs; large quantities being annually brought to Aden from the interior. The twigs are made up into bundles, varying in size according to quantity. The use of the tea is said to produce effects similar to those produced by the Peruvian coca (Erythroxylon coca), namely, extreme wakefulness and capability of bearing extra strain with a minimum of fatigue. Ph. Jour. and Trans., Nov. 29th, 1873, p. 421.

TEREBINTHACEÆ.

Anacardium Occidentale, L.—The active principle, obtained from the pericarp of the fruit, by Mr. Städeler, has been the subject of experiment by Mr. Buchheim, who has obtained results in the main identical with those of Mr. Städeler. The latter had recommended it as a vesicant and substitute for cantharides, having found that by allowing it to act upon the skin for three to seven minutes, and then carefully removing it, a blister is formed in from six to eight hours. Mr. Buchheim, who has experimented with a purchased article, found that it required twenty-four hours or more before a blister is produced, and that the use of cardol is liable to unpleasant after-effects; for if it is not very carefully removed, after allowing it to act from three to seven minutes, the minute quantity remaining is apt to be communicated to other parts of the body (mechanically) and, producing eczematose eruptions, gives rise to intolerable itching. Internally administered, it seems to be inactive, the author having taken three to four drops without noticing any effect. He ascribes this to its perfect insolubility in aqueous liquids. Vierteljahrschr. Ph., 1873, No. 4, pp. 511–514.

Rhus Glabra.—In a former article Mr. Julius Löwe had expressed the opinion that the tannic acid in sumach is different from gallo-tannic acid. Having since succeeded to isolate pure sumach tannic acid, the author finds it to correspond very closely, in all its reactions, with gallo-tannic acid, and therefore regards it identical. By its ultimate analysis he has obtained results which leave little doubt of its identity with the last-mentioned acid. Quercitrin was also found to be a constituent of some varieties of sumach. Zeitschr. Anal. Ch., 1873, pp. 128–136.

Rhus Toxicodendron.—Analyzed by Mr. Buchheim the fresh leaves of the poison oak were found to contain, besides sumach, tannic acid, wax, and fatty matter; an acid which, on account of the small yield, was not further examined, but proved to be inactive, and a substance, which the author regards as identical with cardol (see Anacardium occidentale, L., in this report), which he finds to be the active principle, and to which he ascribes the property of producing the peculiar eczematose eruption. The substance being, as is cardol, neither soluble in water nor volatile, the author endeavors to explain the poisonous effect, which is said to be produced by the peculiar exhalations of the plant, by presuming that minute quantities of the milky juice are carried off mechanically by the evaporation of water from the leaves. The author's results are therefore contradictory to those of Khittel, who supposed the active principle of poison oak to reside in a volatile base, and of Maisch, who found its activity to reside in a volatile acid. Vierteljahrschr. Ph., 1873, No. 4, pp. 514–520.

Rhus Coriaria.—The fruit is used in Turkestan against diarrhœa, as an antiscorbutic, and also against mercurialism. Examined in the laboratory of Prof. Dragendorff, by G. Pfeil, it was found to contain nearly 19 per cent. of tartaric acid. Sugar was not found in pulp; neither tannic acid; but the latter, identical with the sumach tannic acid of other species of Rhus, was found in an extract of the seed. N. Rep. Phar., No. 2, 1874, p. 82.

Methyscophyllum Glaucum, E. and Z., a shrub, with opposite lanceolate, glabrous leaves, recurved in the margins, and flowers borne in axillary panicles, is described by Mr. J. R. Jackson as an African tea-plant (see Leguminosæ), and furnishes the "Boschjenmans-thee" of South Africa. An infusion of the leaves has a very pleasant flavor; and besides being used for coughs, asthmatic, and similar diseases, is a favorite drink with the Bushmen and others. Ph. Jour. Trans., Nov. 29th, 1873, p. 421.

JUGLANDACEÆ.

Juglans Cinerea.—Mr. E. S. Dawson has subjected butternut bark to chemical examination. He found, contrary to the investigations of Thiebaud, that the bark contained tannic acid. It contained also glucose, resin, volatile oil, and volatile acid. To the latter the author ascribes the acridity of the drug, which is observable in the infusion, but not in the decoction of the bark. It is obtained from the aqueous distillate by agitating with ether, and allowing the ethereal solution to evaporate spontaneously, when an orange-colored residue is obtained in which were numerous acicular crystals. These had an acid reaction, and a hot, acrid taste, and were colored deep-violet by the action of liquor potassa. The volatile oil has a peculiar and not very pleasant odor, but was obtained in too small a quantity to subject to further experiments. A. J. Ph., April, 1874, pp. 167–172.

EUPHORBIACEÆ.

Ricinus Communis.—Prof. E. S. Wayne has made an analysis of the leaves of the castor-oil plant, and has found them to contain a crystalline substance, containing nitrogen, but devoid of alkaline properties. He finds it to be identical with the substance obtained by Prof. Tuson from castor seeds, and named by the latter Ricinin. It was obtained by exhausting the leaves with dilute alcohol, evaporating the tincture on a water-bath, and filtering to separate chlorophyll and resin. The filtrate was then treated with moist hydrated oxide of lead, to remove tannic acid, filtering off the clear solution, evaporating to the consistence of extract, and extracting this with alcohol. On exposing the alcoholic solution to spontaneous evaporation, the substance in question crystallized out in the form of yellow crystals (amounting to 60 grains from 1 lb. of leaves). This was purified by resolution in alcohol, treatment with alcohol, and spontaneous evaporation. Colorless crystals, prismatic and tabular in form, were obtained.

An analysis of the ash of the leaves shows that they are very rich in alkalies and phosphoric acid, and, to judge from this analysis and the luxuriant growth of the plant, the cultivation of the plant must be very exhausting to the soil. The author, therefore, suggests the utility of using the plant, after the collection of the seeds, as manure for the next crop, or that they be burned and scattered upon the land from which the plants have been taken. The following are the constituents of the ashes: Lime, 33.40; magnesia, 6.20; potash, 27.15; soda, 2.12; peroxide of iron, 0.70; phosphoric acid, 6.68; sulphuric acid, 2.90; chlorine, 1.63; carbonic acid, 16.20; silica and sand, 2.41; loss, 0.61 = 100.00. Amer. Jour. Ph., March, 1874, pp. 97–100.

Euphorbium.—According to Buchheim, the activity of euphorbium is dependent upon its acrid resin only, and not upon euphorbon, as had been suggested by Husemann. It had already been noticed by Flückiger that by numerous recrystallizations, euphorbon—obtained by boiling euphorbium in alcohol, filtering, allowing to cool, and recrystallizing the warty crystals from hot alcoholic solution—lost to a great extent its acridity; but Buchheim asserts that by simple recrystallization the acridity cannot be entirely removed. It can be removed, however, by treatment with boiling alcoholic solution of potassa, and then recrystallizing several times from hot alcohol. A perfectly pure, tasteless preparation is obtained, which the author has taken in doses of 5 grammes without experiencing the least effect.

The acrid resin seems to consist of two substances. When it is treated with hot alcoholic solution of potassa, the solution agitated with a large quantity of water, and then with an excess of acid, a copious precipitate results, which assumes, when dry, a brown color and powdery consistence, and possesses a repugnant bitter taste, but not a trace of its former acridity. The precipitate yields to ether a portion, which he regards a soluble modification of euphorbon—formed, as had already been observed by Rose, by continuous boiling with the alcohol—which upon the evaporation of the ether remains as a terebinthinate mass. The portion insoluble in ether, amounting to the greater part of the original precipitate, was found to be acid in its characters, freely soluble in alcohol and in weak solution of potassa, but easily precipitable from the latter solution by excess of potassa, or by addition of common salt, etc. The author regards this as the product of the decomposition of the acrid resin by the alkali, calls it *euphorbic acid*, and as no oxygen is taken up in its formation, and no by-products are formed, he believes that it is formed by assimilating water; and that consequently the acrid resin is the *anhydride of euphorbic acid.* Euphorbic acid does not pre-exist as such in the euphorbium, as a cold alcoholic solution does not afford a precipitate upon the addition of solution of acetate of lead; but if this reagent is added to a solution made by boiling, a precipitate is produced, proving that some euphorbic acid is formed by the heating in presence of alcohol. Vierteljahrschr. Ph., 1873, No. 3, pp. 325–330.

URTICACEÆ.

Cannabis Indica.—Samples of Indian hemp, cultivated in Algeria, Tunis, Morocco, and Egypt, were noticed by Hildwein in the Vienna Exposition. The plant was introduced into Egypt by Gastinell, who has also determined its active constituents to reside in an aromatic resin, which he has named

Hashishin.—This was obtained by digesting the tops in alcohol, concentrating the green tincture, and precipitating it in water. The resin, which separates, amounts to about 3 per cent., and is the active constituent. Hildwein states that the Arabs extract the active principle by boiling the tops with butter and water, stirring the mixture assiduously, and then allowing it to cool. The butter, separating upon the surface, acquires a green color, and contains all the activity of the plant. It is used for various baking purposes. Ph. Centralhalle, 1873, No. 42, p. 353.

Hops.—In 1863, Lermer suggested the presence of a peculiar alkaloid in hops. Griessmayer's recent experiments seem to prove the existence of a peculiar volatile alkaloid, which he named lupulina. The concentrated aqueous decoction of ten pounds of hops was distilled with potassa or with magnesia, the distillate neutralized with muriatic acid, evaporated to dryness, treated with cold absolute alcohol, to remove sal ammoniac, the alcoholic liquid heated to boiling and cooled, when much muriate of trimethylamina crystallized. The filtrate evaporated in a water-bath, and finally spontaneously, the residue redissolved in water, in a narrow cylinder, agitated with potassa and ether, the ethereal solution evaporated spontaneously. The remaining alkaline liquid had a peculiar odor, reminding of conia, and a cooling, but not bitter taste. It soon separated small crystals, and finally solidified completely. The author supposes that these crystals are impurities, and that the pure alkaloid is liquid or gaseous. The following reactions were obtained with the alkaline residue:

Chloride of platinum produces, after the addition of alcohol and ether, a green-yellow precipitate; H_2SO_4 and bichromate of potassium causes a violet coloration. Fuming HNO_3 yields at first a yellow color, which turns green, then dark-green, and finally colorless. White precipitates are obtained with tannin, silver nitrate, Fehling's solution, and corrosive sublimate; with chloride of gold, a yellowish-white precipitate, soluble in HCl; with iodine, a brown precipitate; with bromine, sulphur-yellow, becoming orange and brown; with phospho-tungstic acid, voluminous yellowish-white. Nessler's reagent gave the reaction of ammonia; chlorine had no effect; with sulphuric, muriatic, and oxalic acids, no crystalline compounds were obtained. Am. J. Ph., from Chem. Cent. Blatt., No. 21.

CUPULIFERÆ.

Beech Leaves.—Mr. J. Alfred Wanklyn, in the course of experiments on different kinds of leaves regarded as material for making tea, observed that the ashes contained a remarkable quantity of manganese; so much, in fact, that it was green from the manganese it contained, and imparted to water the characteristic red color of a permanganate. The ashes amounted to 2.44 per cent., and were obtained by incinerating 20.8 per cent. of an extract obtained by decoction of the leaves; the percentages being calculated from the absolutely dry leaves. The decoction of the leaves possessing great fragrance, the author suggests that they might possibly be used as a beverage.

In connection with the above subject, the author suggests that more attention be given to the study of the ashes of leaves, as it is to be expected that some of the forest leaves may be found to be charged, not with potash, but with cæsium and rubidium; and perhaps a diligent research may disclose new elements. Chem. News, Oct. 10th, 1873, p. 186.

MYRICEÆ.

Comptonia Asplenifolia.—The leaves of the sweet fern were, by Richard T. Chiles, found to contain albumen, sugar, tannin, gallic acid, gum, extractive, resin, volatile oil, fatty and waxy matter, lignin, and a substance analogous to saponin. The plant is esteemed in domestic practice as a mild astringent tonic, and the author thinks it sufficiently useful to propose formulæ for a decoction, infusion, syrup, and fluid extract, for which see under the proper headings. A. J. Pharm., 1873, July, p. 304.

SALICEÆ.

Poplar Buds.—The constituents of poplar buds have been the subject of experiments by J. Piccard, who found besides chrysin, the ethereal oil of poplar, C_5H_8 $(O = 16)$; a mixture of salicin, populin, and tectochrysin; the latter a higher homologue of chrysin. Chem. News, Aug. 22d, 1873, p. 98; Ber. d. Chem. Ges., July 28th, 1873.

CONIFERÆ.

Juniper Berries.—E. Donath has analyzed juniper berries with the following results: water, 29.44; volatile oil, 0.91; formic acid, 1.86; acetic acid, 0.94; malic acid (in combination), 0.21; wax-like fat, 0.64; green resin of the ethereal tincture, 8.46; hard brown resin of the alcoholic tincture, 1.29; bitter substance by Steer named juniperin, 1.37; pectin, 0.73; protein compounds, 4.45; cellulose, 15.83; ashes, 2.33. Am. Journ. Pharm., from Chem. Centralbl., 1873, No. 29.

Turpentine.—Dr. F. A. Flückiger has had opportunity to observe the collection of turpentine and the preparation of brewers' pitch, lampblack, etc., from it, in the Black Forest of Baden. The turpentine is collected exclusively from Pinus picea, Du Roi (Abies excelsa, De C.). For this purpose the workmen use a peculiar hatchet, made entirely of iron, about 63 centimetres long, and provided with three distinct contrivances; the first, the hatchet proper, with which the trunk is deprived of superfluous branches; the second, opposite to the hatchet blade, consists of a hooked knife, of such length that it will cut through the bark, but not into the wood; the third consists of the end of the handle, which is guttered, and, being turned up at the extreme end, forms a spoon with which the turpentine is removed from the fissures of the bark. With the hooked knife vertical incisions are made as high up the trunk as the operator can reach without the use of a ladder. These are about 1 centimetre deep, a little over 2 centimetres wide, and 2 metres long, several of these being made in the course of time, and they are kept open from seven to eight years. The oleo-resinous exudation is allowed to become semi-solid on the tree, is then scraped off, transferred to copper kettles, in which it is heated with water, and is then submitted to a process of straining and expression by which it is freed from cortical and woody particles. The product so obtained is called water pitch (wasserpech), and varies of course considerably in composition. A sample examined by the author contained in 100 parts, 3.7 oil of turpentine, 11.5 water, and 84.8 resin. The water pitch is freed from water and volatile oil by heating in a copper vessel, provided occasionally with an alembic, but more generally it is open, as the small amount of volatile oil present does not justify its separate collection. It is of interest that the oil of turpentine so obtained is of a green color, owing to copper taken up by contact with the alembic, and that the copper only separates after long standing. The pure resin so obtained but seldom enters commerce, however. It is manufactured on the spot into pitch, to which either a harder consistence is given by incorporating with it American resin, or a softer consistence by the admixture of soft French resin (from Bayonne). The residues of the various operations are used along with other appropriate materials for making lampblack, with which commerce seems to be furnished mainly by the manufactures in this region. N. Rep. Ph., 1873, Nos. 11–12, pp. 686–693.

Oregon Balsam of Fir.—Under this name an oleo-resin has appeared in commerce, which Prof. J. M. Maisch thinks is rather suspicious in appearance. It comes from New York, has not been traced further, is thick, liquid, bright brownish in color, terebinthinate, and aromatic in odor. On rubbing a little of it between the fingers, different odors become quite evident, the last one remaining being that of oil of nutmegs. It has the appearance of being merely a solution of common resin in oil of turpentine, flavored perhaps with a little of the oil of *Eucalyptus globulus*, and a somewhat larger quantity of oil of nutmegs. A. J. Ph., March, 1874, p. 106.

PIPERACEÆ.

Pepper.—During the examination of a large number of specimens of ground pepper, Bouchardat met with various inert powders, and among those which he detected most often was one prepared by drying and finely pulverizing the parenchyma of potatoes which is left as a residue in the manufacture of starch. Pepper so adulterated has a more feeble odor, a sweetish, and afterwards pungent, taste, and is of a uniformly gray color, whilst the powder of pepper presents some blackish particles and some of a yellowish-gray color. It also floats longer on the surface of water than does pure powdered pepper. Lentil flour, chalk, and linseed cake were also found as adulterants of powdered black pepper. White pepper was found adulterated with talc, chalk, and starch in considerable proportions. The usual adulterants may be detected by means of a microscopic examination, with an instrument of 300 to 400 magnifying power, in the hands of a skilled person. The author concludes that, in consideration of the great skill with which pepper is now adulterated, dealers should, as far as possible, buy their pepper whole and grind it themselves. Ph. Jour. Trans., June 14th, 1873, p. 993, from L'Union Pharm.

Cubebs.—The presence of cubebic acid in cubebs was first intimated by Bernatzick in 1863, who so called an amorphous resin obtained from an ethereal extract of cubebs, deprived of its volatile oil by several distillations with water, by dissolving it in alcohol, heating the solution with solution of potassa, adding water, filtering, and precipitating the filtrate with chloride of barium. By exhausting the precipitate with boiling water, filtering the solution, crystallizing and recrystallizing several times, a barium salt was obtained, which, when decomposed with an acid, forming a soluble salt with barium, liberated the cubebic acid in question; for which he, however, failed to ascertain the composition. C. F. Schulze has since endeavored, and has succeeded, to obtain a peculiar acid from cubebs, and his experiments render it probable that the substance obtained by Bernatzick was not an acid, or at all events was different from that obtained by Schulze. The cubebic acid of Schulze is amorphous, forms a crystallizable compound with soda, and has a composition of $C_{28}H_{15}O_7+HO$ (see Cubebic Acid in this report). He also obtained *cubebin* corresponding in its properties with the cubebin of Capitaine and Soubeiran. It forms handsome white, silky needles, resembling sulphate of quinia; is tasteless; insoluble in water and liquor potassa; sparingly soluble in cold alcohol, but freely soluble in boiling alcohol. Conc. sulphuric acid produces a purple color, and partly chars the crystals. Its melting-point is near 115° C. (= 239° F.). Arch. Ph., 1873, pp. 388–394.

GENERAL SUBJECTS.

Austria's Contribution of Crude Materia Medica Products.—In an abstract of his report to the Directors of the Vienna Exposition (communicated to N. Rep. Ph., 1873, No. 10, pp. 610–623), Dr. V. Schroff gives some interesting information, of which the following is extracted:

The production and collection of crude drugs, while quite large, is of necessity much more limited than that of countries possessing transmarine dependencies; even Holland and Portugal being enormously in the advantage in this respect. But in addition to this, the comparative ease with which a living is gained abroad, induces many laborers, and among them the practical gatherers, to seek employment elsewhere. For these reasons an increase in the collection of crude drugs in Austria can scarcely be looked for, the contrary being next to certainty.

Among the most important Materia Medica products of Austria the author mentions

Valeriana Celtica (the Nardus Celtica of the ancients), which abounds upon the bleak summits of the Styrian and Carinthian Alps, and was used by the Celtic tribes inhabiting these alpine regions long before our era, on account of its peculiar aroma. From thence the plant was propagated, along the trails, to the Orient and the remotest regions of Asia; subsequently it was introduced into the Levant by the Venetians. The annual production of this drug, which consists of the plant proper (weighing only a few grains), and of the grass immediately surrounding it (together with earthy impurities), is about 3000 barrels, each weighing 110 to 130 pounds (60 to 70 kilos), and is consumed principally in Eastern countries, being shipped from Trieste to Egypt, Tunis, Morocco, and India. The same drug was exhibited by Egypt, Persia, and the East Indies by the name of sumbul, but must not be confounded with the sumbul with which we are familiar as musk root.

Crocus Sativus, which was introduced into Austria from the Orient, in the year 1198, by one of the Crusaders, the Knight von Rauheneck, was, during the middle ages, one of Austria's most important articles of export. Its culture is now reduced to a minimum, Lower Austria producing scarcely more than one hundredweight annually (only twenty pounds according to Steininger). This great falling off in its production, notwithstanding the valuable works upon the subject of its culture by J. B. Mack in 1793, Peltrach in 1797, and Senoner in 1847, is the more to be regretted, because Austrian saffron commands to this day nearly double the price that does the Spanish or French, and may be cultivated in Austria just as profitably even at the same price.

Rheum was first cultivated in Austria in 1770–1775, but not, as in England, for its leaves, but for the medicinal qualities of its root. Quite a number of large plantations have been under cultivation from time to time, and Austrian rhubarb has at times been exported in considerable quantities; but less for pharmaceutical than for industrial purposes (for dyeing). Latterly, however, the demand has been reduced to a minimum, even at very low figures.

Oil of Rosemary is produced in considerable quantities and exported from Istria and Dalmatia, from whence considerable quantities of bay leaves, juniper berries, sweet and bitter almonds, and their respective oils, sage, honey, and wax are also exported *via* Trieste. From this latter port are also exported considerable quantities of oil of turpentine from Carinthia and Tivoli, and many medicinal herbs, flowers, seeds, and roots, chiefly collected in Hungary, Moravia, and Bohemia, such as Belladonna, Malva, Centaurium minor, Althæa, Arnica, Malva arborea, Papaver rhœas, Sambucus, Crocus, Rad. rhei, Anchusa tinctoria, Iris, Aniseed, Coriander, Caraway, Hops, Turpentine (oleo-resin), Lichen islandicus, and

Cantharides. Besides the forest products, included in the above, various resins and products of distillation from the various Coniferæ, pitch, wood vinegar, creasote, tar (especially beech-tar), are largely exported.

The author concludes by drawing attention to the facilities afforded in Austria to the student of "Pharmacognosy," which, for the past twenty years, has been a special course of instruction in all high schools; the necessary cabinets of specimens being provided. The most complete institution in this respect is that of the University of Vienna, in which both teacher and student have abundance of material at their disposition to pursue the study in this branch of medical and pharmaceutical knowledge in every direction. The magnificent pharmacognostic collections of the Austrian Apothecaries' Association, in addition, afford opportunities to the student of pharmacy which are hardly equalled elsewhere.

Vegetable Physiology.—The vivifying effect of camphor upon freshly severed and wilted parts of plants, first observed by Barton in 1798, had not since been the subject of investigation. Experiments made by Vogel and Raab indicate that the conclusions arrived at by Barton are somewhat exaggerated. The vivifying effect of camphor upon vegetation cannot be regarded, as it is by Barton, as a general law of nature. To the contrary, while upon some plants such effect is undeniable, no effect is produced upon others, and upon some species it produces absolutely deleterious effects. The effect upon the germinating power of seeds is, however, more favorable, the germination being not only accelerated but revived when partly destroyed; and this seems to be without exception. Oil of turpentine seems to have the same favorable effect upon the process of germination; but, unlike camphor, it has a deleterious effect upon the further development of the plant. N. Rep. Ph., 1873, Nos. 8–9, p. 545.

B. ANIMAL SUBSTANCES.

ANNULOSA.

Leeches.—A "Country Chemist," in a communication to the Chemist and Druggist (November, 1873, p. 391), describes a variety of leech found in a lake—called Achmere or Lechmere—in Cheshire. It belongs to the species S. medicinalis, but is much smaller than those produced on the Continent of Europe. The author gives some further information, descriptive of the habits and uses of leeches in general, and states that he has found them to keep best, by placing them in an ordinary brown-glaced jar, containing a layer, one inch deep, of well-washed sand and large pebbles, and filled two-thirds with rain-water. The jar is kept in a cool place, but the water should never be allowed to freeze, although the leeches will bear a reduction of temperature to 40° F.

INSECTS.

Vesicating Insects.—Although one kind, the officinal cantharides, is almost universally used, Dr. Fumouze suggests, it does not hold its rank as pre-eminently *the* vesicating insect because of its superior vesicating power, but because it is most easily and abundantly collected, and its vesicating properties are quite sufficient for the wants of therapeutics. These are also the reasons why it has superseded the use of *meloë* and *mylabris*, even in the countries where these were formerly employed. The statements of recent writers that the *mylabris* are employed in Italy and the East, and that the *Meloë majalis* or *proscarabæus* is employed in Spain, the author finds to be erroneous, as he, desiring to study these insects, asked for samples of them in Italy, Turkey, and Spain, and received as an invariable answer that they no longer existed in commerce. The only *mylabris* that is obtainable in quantities, is the *Mylabris sidæ*, better known commercially by the name of China mylabris, which has latterly reached European markets from China in pretty large quantities. The author finds the *Meloë majalis* to contain .12 per ct. of cantharidin ; while the *China* *mylabris* was found to contain as much as cantharides,* which in its turn yielded quantities varying between 0.17 and 0.48 gramme from 100 grammes, the average of eight samples being 0.354 gramme. Pharm. Jour. Trans., July 12th, 1873, from Practitioner.

Cantharides.—Prof. Maisch has endeavored to find a method for determining by assay the value of cantharides preparations, and, it seems, more especially of the cerate; but owing to the behavior of cantharidin to solvents, its separation from resinous and oily substances is very difficult, and an assaying process seems, therefore, to be impracticable. See Proceedings, 1873.

Cochineal.—J. Müller has extracted from the "Dictionario estatistivo-administrativo de las Islas Canarias," some statistics relative to the acclimatization and cultivation of cochineal on the Canary Islands. Although the insect had been brought to Europe as early as 1523, no efforts were made to acclimatize them, and the cactus upon which they live, until 1825; and the results for the first ten years were rather discouraging than otherwise. While in 1832 but 120 lbs. was yielded, the yield in 1844 amounted to 90,000 lbs.; in 1849, to 390,000 lbs., and in 1860, to 600,000 lbs. Of this last yield, 240,000 lbs. was produced upon the Island Gran Canaria alone, and since then the crop from this island has increased enormously, the yields of 1869 and 1870 amounting respectively to 3,000,000 lbs. The great increase in the production was induced by the introduction of guano (since 1852), the application of which necessitated, however, a large supply of moisture. The completion, within the last ten years, of large aqueducts and reservoirs has so furthered the cochineal production, that the large production, above stated, became possible. By the introduction of lac dye from the East Indies, the prices of cochineal have been so reduced, however, as to make its cultivation scarcely profitable. Since 1862, tobacco has therefore been introduced, and as the climate and soil of the Canaries have proven very favorable to the cultivation of the latter (the quality is said to be scarcely inferior to that grown upon Cuba), there is a probability that the culture of the cochineal will gradually be superseded by that of tobacco, and that in consequence the dye-stuff will again command a higher price. This is the more to be regretted as all endeavors to acclimatize the insect in the East Indies, Java, Algiers, and in various portions of Southern Europe, have signally failed, while in Honduras the culture is yearly more neglected. Arch. Pharm., Sept., 1873, p. 232.

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* See also Proceedings Amer. Phar. Assoc., 1872, pp. 256–258.

Mexican Honey Ant.—Mr. William Saunders has written a very interesting paper on the Mexican Honey Ant, from data furnished chiefly by Mr. Jacob Krummeck, of Santa Fe, New Mexico. See Proceedings, 1873.

Insect Enemies of Drugs.—Mr. William Saunders read a paper on the insect enemies of drugs at the meeting of the Association in Richmond, which will be found of great interest and value to the pharmacist. See Proceedings, 1873.

PISCES.

Isinglass.—A very comprehensive paper on the isinglass of commerce, by Mr. P. L. Simmonds, is published in the Chemist and Druggist (Feb., 1874, pp. 46–48), in which the history, sources, preparation, and commercial varieties of isinglass are detailed.

Russian Isinglass is obtained principally from the sturgeon, sterlet, stellifere, and coregonus; their relative value being in the order in which they are named. The following is the method pursued in the preparation of isinglass from the sturgeon: The bladders are left some days in the water, which is frequently changed, in order to remove the fatty and bloody particles; they are then cut lengthwise into sheets, which are exposed to the sun and air, the outer part being attached to boards. The inside, which is formed of layers of pure isinglass, is carefully detached from the exterior layer, wrapped in linen, and pressed, in order to keep it from contracting; it is then made up into parcels according to size; those from large sturgeons being composed of from ten to fifteen sheets, and from the ordinary sturgeon of twenty-five sheets. These parcels, to the number of eighty, are packed in a linen bag, covered with rush matting, and sent away sealed with lead.

A good fish-glue is also made in Astrakan from the scales of the carp. The dorsal cord or tendons of the vertebral column of a larger species of sturgeon, prepared in a certain manner, is known by the name Vesiga, and is much esteemed for the table; being chopped up and used, in Russia, in the preparation of small fish-cakes. Vesiga is prepared by first carefully washing and expressing the dorsal cord to extract soft matter, drying, and putting up in packets the entire length; folded in the middle.

Brazilian Isinglass is obtained and exported to a large extent from Para. One or the other of the Siluroid fishes common in Guiana probably yields the Brazilian isinglass, which comes chiefly in lump or pipe.

West Indian Isinglass, so called, is obtained from two Siluroid fishes, *Silurus Parkerii* and *S. felis*, in British and French Guiana. That of the latter is especially used in the clarification of beer. Reduced into small shreds by the action of a mechanical plane it dissolves completely in cold water, and is compared with Russian isinglass as two to three.

North American Isinglass is described, and its preparation from various sources dwelt upon. A commerce has sprung up in isinglass obtained in the Canadian waters from the sturgeon; a product which had previously been rejected among the under entrails of the sturgeon.

India Isinglass.—Quite a trade is carried on in isinglass from India, which is obtained from several species of *Polynemus*, especially *P. Sele*, from several *Siluridæ*, and from *Corvinus niger*. The sounds of these fishes are dried, and may then be separated by mechanical means into two very distinct layers, one of which, comprising nine-tenths of the whole, consists of pure isinglass. The sounds of the Suleah weigh from 12 to 16 ounces.

Chinese Isinglass is obtained chiefly from three kinds of fish: 1. The My-yu (*Sciæna lucida*); 2. Ta-houang-yu (*Otolithus maculatus*); 3. Mung-yu (*Anguilla* (*Muræna*) *pekrinensis*, Basilewski). The isinglass, called in China Ju-ka, occurs in plates of a horny appearance, whitish, and of a tissue resembling animal membranes. It is prepared by washing the sounds in water for about two hours, then placing in a water-bath for a certain time. When, by the touch, it is found to be soft, it is removed and beaten with a heavy hammer—a delicate operation, which has to be done at the proper time. It is then flattened, and rolled by the hand, and horizontal incisions are made so that the air may more readily reach, and the drying be more rapid. The glue made from this is of excellent quality, but often yellow or gray tinted, according to the inferior quality of the substance employed. The author suggests that if Chinese isinglass were treated with sulphurous acid a better commercial product might probably be obtained.

Cod-liver Oil.—The latest novelty proposed as a vehicle for the administration of cod-liver oil is bread. Messrs. Carre and Lemoine have contrived so to incorporate it with bread that each pound contains a little more than 2 ounces, or 5 tablespoonfuls and 3 ounces of milk. The bread looks beautifully white, has hardly any taste, and is eaten by children and adults very willingly. Five or six tablespoonfuls may be given per diem without any trouble. Med. News, Sept., 1873, p. 150, from Lancet, Aug., 1873.

INORGANIC CHEMISTRY.

HYDROGEN.

Hydrogen.—The danger of explosion, during the generation of hydrogen, is entirely avoided, according to Fresenius, if between the exit-tube and the wash-bottle a small tube is placed in which alternate disks of wire netting and loose cotton are inserted. N. Rep. Ph., 1873, p. 429.

Natural vs. *Artificial Ice.*—Experiments made by the "Messagerie française" have determined that artificial ice melts slower than natural ice. One hundred kilogrammes of natural ice from Switzerland melted completely in 107 hours. Equal weights of ice, exposed at the same time and under the same circumstances, from Norway, required 115 hours; artificial by Carré's apparatus, 130 hours, and by Tellier's apparatus, 144 hours.

Great Salt Lake Water.—The following is the composition of Great Salt Lake water as found by Mr. H. Basset:

100 parts left a solid residue of		13.67
In 100 parts by weight—		
Chlorine,	7.36	
Sulphuric acid,	0.88	
Sodium,	3.83	
Potassium,	0.99	
Calcium,	0.06	
Magnesium,	0.30	
Total,		13.42
Loss,		0.25

The water has a slightly alkaline reaction, a sp. gr. of 1.102 at 17° C. (= 62.6° F.), and was collected by Dr. W. Marcet, F.R.S., in August, 1873. Chem. News, Nov. 7th, 1873, p. 236.

Peroxide of Hydrogen.—The following method of preparing it is recommended by Mr. Jul. Thompson: Moist hydrated peroxide of barium is treated with dilute sulphuric acid by gradual addition, until the acid is nearly neutralized; the solution is then filtered, and the slight excess of acid is removed by the careful addition of baryta water. The entire operation may be carried out in an hour's time if the hydrated peroxide, as prepared by the author, is kept on hand (see Hyd. Peroxide of Barium in this report). The decomposition goes on regularly as well with dilute as with stronger sulphuric acid, a solution of sulphuric acid containing 1 part to 5 of water, answering the purpose as well as one more dilute. Zeitsch. Œst. Apoth. Ver., 1874, No. 7.

A delicate reagent for peroxide of hydrogen is, by Prof. Bœttger, found to be ammonio-nitrate of silver, which must, however, be entirely free from excess of ammonia. A few drops, when added to water containing peroxide of hydrogen and then bringing to the boiling-point, cause instantaneously turbidity, by a reduction of the silver to the metallic state. Ph. Centralhalle, 1873, No. 47, p. 395; Polyt. Notizbl.

NITROGEN.

Nitric Acid.—In performing the test for nitric acid by ferrous sulphate, as an approximate indicator of the presence of nitrates in drinking-water, Mr. Thomas Bolas recommends it as more advantageous to float the liquid under examination on a solution of ferrous sulphate in oil of vitriol, rather than to follow the usual method of floating an aqueous solution of ferrous sulphate on the suspected fluid mixed with oil of vitriol. The solution of ferrous sulphate in oil of vitriol is prepared by mixing oil of vitriol with 10 per cent. of solution of ferrous sulphate, and heating the mixture sufficiently to decompose any nitric acid that may be present as impurity. When cold the colorless solution is ready for use, and may be labelled "Nitric Acid Test." It is convenient to introduce the fluid to be tested by means of a pipette having the delivery end bent once at a right angle, and having a rather small opening, otherwise the rush of fluid causes considerable agitation. By adopting this modification of the test, two principal advantages are attained; it is unnecessary to test the sulphuric acid each time it is used, and the loss of time required to cool the usual mixture is avoided. Chem. News, Nov. 14th, 1873.

Mr. W. F. Donkin read a paper before the Chemical Society, "On the Estimation of Nitrates in Potable Waters," in which he advocates a process which is founded on the reaction that a nitrate in the presence of chlorides, when treated with phenol and sulphuric acid, gives a reddish solution, which, on the addition of an excess of ammonia, changes to a more or less decided blue; this becomes gradually more intense on standing. The water under examination is compared with a standard solution of nitrate of potassium, containing a known quantity of the salt, which is treated in a precisely similar manner. If certain details given in the paper are closely observed, it is possible to detect 1 part of a nitrate in 4,000,000 parts of water. Chem. News, Nov. 14th, 1873, p. 254.

SULPHUR.

Sulphur.—Capt. G. A. Strover, in a paper upon the Metals and Minerals of Upper Burmah, gives the following description of the mode of extracting sulphur in the Shaw States, Burmah; the sulphur being found exclusively in the form of metallic sulphurets, and in some of the states in inexhaustible quantities. Common chatty-shaped vessels are made on the spot from the soft blue clay in which the ore is found. The larger vessel is filled with broken ore and placed on a fire, a clay retort being fitted to the top, and communicating with the smaller vessel. The sulphur is then condensed, after which the retort is broken and a hollow tube of flower of sulphur extracted therefrom, which is superior to that condensed in the vessel. Iron pyrites do not appear to be utilized in the manufacture of sulphur, and it is doubtful whether the Burmese could utilize them. These are found in abundance in Upper Burmah. Chem. News, October, 1873, pp. 188–89.

The determination of sulphur is most readily conducted, according to Sauer, by introducing the substance contained in a porcelain vessel into a combustion-tube, and heating in a current of oxygen, collecting the sulphurous acid formed in bromated hydrochloric acid, and determining it as sulphuric acid by means of baryta. The method, which, as the author admits, was already recommended similarly by Mixter, is especially applicable for the determination of sulphur in coaks, and in other sulphur compounds that do not eliminate sulphur by heating. Arch. Pharm., August, 1873, p. 180.

Oxytetrachloride of Sulphur, $S_2O_3Cl_4$ $(O = 16)$, has been obtained and analyzed by A. Michælis and Schifferdecker, who describes it as a white crystalline mass, closely resembling phosphorus in appearance, and of peculiar irritating odor. Chem. News, October 10th, 1873, from Ber. d. d. Chem. Ges., September, 1873.

Sulphuric Acid.—G. I. Warner has observed that when hydrogen is passed through hot sulphuric acid it is deoxidized, and sulphurous acid is formed. The reaction appears at about 160° C. (= 320° F.), and the quantity increases with the temperature, but at no one point was the decomposition complete, and at temperatures near the boiling-point the sulphuric acid always distils over unchanged. This will, the author believes, explain the fact that sulphuric acid, even containing a considerable amount of water, yields, when heated to the boiling-point with zinc, not hydrogen, but sulphurous acid. Chem. News, July 11th, 1873, p. 13.

SELENIUM.

Selenic Acid.—Dr. V. Gerichten gives a simple and certain method for preparing hydrous selenic acid, but all his attempts to produce the anhydrous acid, yielded a mixture of the substance sought and of selenious acid. The author finds it possible to prepare alums in which selenic acid replaces either the sulphuric acid in combination with potassa, or that united with alumina, and the same result may be obtained with the double salts of the formula $M_2RO_4.MRO_4+6H_2O$ ($O = 16$). It is possible in all these salts to replace the sulphuric acid, molecule for molecule, by selenic acid, and the prodigious mass of salts thus obtained are all isomorphous with the two extreme members of the series,—the pure selenic and the pure sulphuric double salts. Chem. News, Oct. 17th, 1873, from Ber. d. d. Ch. Ges., Sept. 3d, 1873.

CHLORINE.

Chlorinated Lime.—It is generally assumed as a fact that chlorinated lime is a mixture of equivalent quantities of hypochlorite and chloride of calcium with unchanged lime, and the production of chlorine upon the addition of mineral acid is explained to be a secondary reaction between the simultaneously liberated hydrochloric and hypochlorous acids. C. Göpner, by careful experiments, proves these assumptions to be erroneous. He proves that chloride of calcium is not necessarily formed when chlorine reacts upon slaked lime, and that its formation is mainly due to the free hydrochloric acid gas contaminating the chlorine, and also by carbonic acid or carbonate of calcium contaminating the lime. By carefully excluding these the author has obtained a bleaching powder which was entirely free from chloride of calcium. The presence of unchanged lime is owing to the formation of chloride of calcium, which, forming incrustations, prevents the particles from coming in contact with Cl.

The author, furthermore, proves that by the action of mineral (or carbonic) acids chlorine is given off, and not hypochlorous acid, and that, therefore, chlorine, in its isolated condition, is the active bleaching agent, and not hypochlorous acid, as usually assumed. The determination of this fact was made by an unpublished method of Wolter's, which depends upon the property of chlorine water, when shaken with mercury, to produce calomel, while hypochlorous acid, under the same circumstances, produces a brown crystalline precipitate containing, besides Cl, also O, and minute quantities of corrosive sublimate remain in solution.

According to the author's view, chlorinated lime is a compound in which Cl unites directly with oxide of calcium, and corresponds to the empirical formula, $CaOCl_2$ ($O = 16$). The difference of odor observed between chlorine and chlorinated lime is accounted for by the extreme dilution of the chlorine, liberated by the action of the air (carbonic acid) from the chlorinated lime. If a drop of chlorine water is dropped into a stoppered flask of two litres capacity, and is allowed to diffuse itself, the odor will be precisely that of chlorinated lime. The presence of moisture is necessary to the production of the compound, and the author has found that when the gaseous chlorine is charged with aqueous vapor, a product was obtainable containing 42.84 per cent. active chlorine. It may be stated, however, that the author's results in practice are far behind the theoretical requirements, which, according to the empirical formula, $CaOCl_2$ ($O = 16$) should contain 55.9 per cent. of chlorine. Ph. Centralhalle, No. 46, 1873, pp. 385–387; Polyt. Jour., 1873.

C. Schorlemmer, doubting the correctness of Gœpner's views of the constitution of chlorinated lime, repeated some of his experiments, and finds that Gœpner is mistaken when he asserts that chlorine, and not hypochlorous acid, is eliminated when chlorinated lime is treated with a mineral acid. If chlorinated lime is distilled with dilute nitric or sulphuric acid, the distillate possesses stronger bleaching power than does freshly prepared chlorine-water, and when tested by Wolter's test, produces a brown precipitate of oxychloride, and the solution contains corrosive sublimate. Ibid., No. 8, p. 58, from Polyt. Notizbl.

The Powdering of Chlorates is usually effected in a mortar, the salt being kept moist by alcohol. To obtain larger quantities of chlorate, in the form of powder, suitable for colored fires, A. Gawalowski proposes to dissolve the chlorate in hot water to complete saturation, and to dip into the solution plates of glass, which, on being removed, become covered with a fine crystalline powder of the salt, which is readily collected upon paper and dried, without the least danger to the operator. Am. J. Ph., from Pharm. Centralhalle, No. 24, from Jour. f. Pr. Chem.

BROMINE.

Bromine.—It has been known for many years, that during the manufacture of iodine a certain quantity of iodide of cyanogen sometimes finds its way into one of the glass condensers; and it would appear, from experiments made by T. L. Phipson, that a similar compound with bromine may occur in this liquid element—a more serious case than the other, since it is dissolved and masked in the liquid. The author recommends the following method for its detection: Take an equal weight of iron-filings (say a half ounce) to that of the bromine, and add to the iron-filings four or five times their weight of water; mix in the bromine very gradually, and stir all the time, filter rapidly while warm from the reaction, place the filtered liquid in a partially closed bottle, and if a cyanogen compound is present, the whole of the cyanogen will, in the course of two days (with the above quantity), precipitate as ferrocyanide of iron (Berlin blue), which may be collected upon a filter. The author has found the sample examined to contain from 0.5 to 1 per cent. of cyanogen, and believes that it is often present in commercial bromine. Chem. News, Aug. 1st, 1873, p. 51.

According to S. S. Garrigues, bromine is now manufactured on a very extensive scale in the United States; not less than 130,000 pounds having been produced during the year 1872 in the Ohio and Kanawha Valleys. The quantity of bromine manufactured at any one establishment, in proportion to the salt produced by the same, is one pound for every thirteen bushels of salt. Some 800 or 1000 pounds of bromine are also produced annually along the Monongahela and Alleghany Rivers, where it is, however, converted into bromide of iron, to avoid the difficulty of handling and risk of forwarding it. See Proceedings, 1873.

Bromide of Calcium.—Mr. R. Rother has found that, when dibromide of sulphur and carbonate of calcium are allowed to react upon each other in the presence of water, at ordinary temperatures, bromide of calcium and sulphite of calcium are formed, free sulphur is deposited, and carbonic acid is eliminated. On the basis of this observation he has succeeded in preparing pure bromide of calcium, and has devised the following formula:

Take of bromine 4 troy ounces, precipitated carbonate of calcium 4 troy ounces, sublimed sulphur $\frac{5}{8}$ troy ounce, purified animal charcoal $\frac{1}{4}$ troy ounce, water sufficient. Place the sulphur and carbonate of calcium into an ordinary quart bottle, add 1 pint of water, and finally the bromine; shake the mixture frequently, and, during the intervals of rest, set the bottle into the open air or in a good draft, leaving it unstopped. During the earlier part of this operation some of the bromine vapors will escape, but latterly the dark brown-red combination of sulphur and bromine will cease to evolve bromine vapor, and then the mixture may be manipulated in any apartment without contaminating the atmosphere with deleterious or irritating gas. When the solution has become colorless, strain it, press the insoluble residue, mix it with 4 ounces of water, strain and express again, boil down the united solutions to 8 fluid ounces, and filter while hot; then evaporate the filtrate to dryness—slackening the heat when a pellicle begins to form—continue the heat for 10 to 15 minutes, and then allow the dry mass to cool. Now pour on 6 fluid ounces of water, add the charcoal, heat nearly to the boiling-point, and filter; evaporate the filtrate at a boiling temperature until a pellicle has formed nearly over the entire surface, then remove it from the fire, allow it to congeal to a soft mass, throw this while yet hot into a chilled mortar, rub it rapidly to powder, and transfer it immediately to a well-stoppered bottle. The yield should be nearly 6 troy ounces. The salt still contains a little water, perhaps 1 or 2 equivalents. The Pharm., Nov., 1873, pp. 321–325.

IODINE.

Neutral Iodide of Potassium.—T. B. Groves finds the following the simplest method for obtaining the salt entirely neutral: The commercial salt is dissolved in just sufficient water; its alkalinity is neutralized with dilute sulphuric acid, a small quantity of alcohol is added, to remove the sulphate of potassium, and the liquid filtered and evaporated to crystallize. The crystals are small, colorless, and speedily turn yellow in contact with the air. The neutral iodide seems to be unable to withstand the combined attacks of ozone and carbonic acid, until a certain degree of alkalinity has been established.

Alfred Southall, in manufacturing this chemical, finds it necessary to have the solution as nearly neutral as possible, in order to obtain semitransparent crystals; in the presence of an excess of acid, opaque crystals are obtained. Am. Jour. Ph., from Pharm. Journ. and Trans., Feb. 21st, p. 669.

Iodide of Calcium.—Ch. Ménière recommends to prepare it from sulphuret of calcium, because the other metallic oxides are then effectually removed; some iodate of calcium which is likewise formed, has to be deoxidized by calcining the saline mass with a little charcoal; the residue should then be dissolved in 95 per cent. alcohol, when the pure iodide will be obtained.

During the siege of Paris, iodide of calcium was usually found to be fraudulently mixed with iodide of potassium. The author calls attention to the presence of sometimes considerable quantities of lime in the commercial iodide of calcium, added for the purpose of obtaining a white salt. Am. Journ. Pharm., from Bull. Soc. Roy. Pharm. de Brux., Nov., 1873.

Iodic Acid.—It has been observed by Jacquemin, that pyrogallic acid placed in contact with free iodic acid or iodates is instantly browned, the reaction being still energetic when the iodic acid is diluted with 250 parts of water. Neither bromic nor chloric acid (except the latter concentrated enough to ignite paper) have the same action; hence the author suggests the use of pyrogallic acid for the detection of iodates in iodide of potassium. Chem. News., Aug. 15th, 1873; Comp. Rend., July 21st, 1873.

Iodates.—A very sensitive reagent is found by Egidio Pollacci in phosphorus, which can be applied as well in cases where iodates are associated with iodides as where they are pure. If phosphorus is placed in contact with an aqueous solution of iodate of potassium, the iodine, however dilute the solution may be, is perfectly reduced. The same reaction occurs with other iodates. The first action is a partial reduction of the iodate into iodide of potassium, with formation of phosphoric acid; the phosphoric acid then acts upon the iodide as well as the iodate, forming phosphate of potassium, and liberating iodic and hydriodic acids; these two acids being incompatible, form water and free iodine. Chem. News, Nov. 21st, 1873, from Gazzetta Chim. Italiana, 1873.

Iodate of Calcium.—In a paper "On the Presence of Iodate of Calcium in Sea-water," E. Sonstadt had already drawn attention to the action of this salt on putrescible matter. Since then he has continued to make experiments on the properties of iodate of calcium as an antiseptic and disinfecting agent, both with the dry salt and with a solution made by dissolving 1 gramme in 1 litre of water, and finds it to possess remarkable preservative power, even when used in comparatively minute quantities upon urine, albumen, fish, meat, rain-water, etc. Eggs immersed in the iodate of calcium solution were, after a month, not to be distinguished by smell or taste from perfectly fresh eggs. Fresh butter, covered with the same solution, loses nothing in quality during three weeks, and would probably have kept good a much longer time. A very minute proportion of the solid iodate sprinkled over meat, will keep it good for three or four days longer (in summer-time) than it will otherwise keep, and, if the meat has acquired a taint before the application, the taint is completely removed; this applies to the cooked as well as to raw meat. Such small quantities of iodate of calcium as may be introduced into food by the treatment described by the author, do not in any way alter the normal taste of the food; the only modification produced is to restore the original flavor when that has been disguised or impaired by commencing decomposition. Taken internally in different doses, the author experienced no inconvenience until he took 1 gramme; this dose leaving a slight after-taste in the mouth, but he perceived no inconvenience, except a slight headache next day, an increased appetite, and, generally such effects as might follow taking an ordinary dose of quinia. The author furthermore inclines to the belief that in cases of fevers, and of attacks of diseases, such as typhus and cholera, propagated by some specific organic poison, the exhibition of iodate of calcium would be followed by marked effects. Chem. News, Dec. 12th, 1873, pp. 297–298.

BORON.

Borates.—Ditte produces a number of borates in the dry way by the following method: A mixture of equivalents of alkaline chlorides, into which he introduces the amorphous borates or the elements of the salts which he wishes to obtain, is heated in a crucible, so that the bottom may become red. A part of the borates dissolves in the fused mass and crystallizes in the upper and cooler portions. In this manner the borates of lime CaO,BoO_3; $3CaO,2BoO_3$; and $2CaO,3BoO_3$; and the borates of strontia, $SrO,2BoO_3$; $2SrO,3BoO_3$; SrO,BoO_3; and $3SrO,2BoO_3$ were obtained. Chem. News, Nov. 7th, 1873, from Compt. Rend., Oct. 6th, 1873.

CARBON.

Carbonado.—For some time a black, shining mineral has been found in Brazil, which has been found to consist of pure carbon, is found to be as hard as the diamond, and, being much cheaper than even the smallest diamonds, it finds useful application for cutting diamonds. It enters commerce by the name of "carbonado," and is frequently found in the district of Bahia in pieces weighing over 1000 carats. Zeitschr. Œst. Apoth. Ver., No. 16, p. 291.

Carbonic Acid.—K. Calmberg suggests, in order to avoid error from disengagement of air, when testing for carbonic acid in pharmaceutical preparations, in which it should not be contained (oxide of zinc, magnesia, etc.), that the substances should be first triturated with water, heated in a test-tube to drive off air completely, then pouring off the greater portion of water, and allowing the acid to flow in along the side of the tube. N. Jahr. Ph., 1873, p. 217, from Vierteljahrschr. Ph.

CYANOGEN COMPOUNDS.

Hydrocyanic Acid.—Mr. S. Towerzey, having examined quite a number of samples of hydrocyanic acid, both dilute and of Scheele's strength, arrives at the conclusion that commercial hydrocyanic acid is very variable, and as a rule not up to pharmacopœial strength (in Great Britain). Of twelve samples examined only one was up to the standard. His experience, furthermore, seems to indicate that the variations observed by him are largely due to the extreme volatility of the HCy, and thinks it of paramount importance that every chemist (pharmacist) should assure himself of the strength of the preparation before using it. Am. Jour. Ph., Feb., 1874, p. 69, from Ph. Jour. Trans., 1873.

Sulphocyanide of Potassium has been found by Rüdorff to be capable of producing the lowest reduction in temperature, when undergoing solution, of any saline compound that has hitherto been used for freezing mixtures. Five hundred grammes, when dissolved in 400 c.c. of water at 10° C. (= 50° F.) reduce the temperature to —23° C. (= —94° F.). (See Freezing Mixtures, in this report). Ph. Centralhalle, 1874, No. 3, p. 24.

POTASSIUM.

Potassa.—The usual methods of determining potassium salts quantitatively are liable to error, especially if present in very small quantity, as by the drying of double chloride of potassium and platinum upon a filter, inequalities in the drying are apt to occur. To obviate this error the filtrum is often incinerated, but Dr. F. Mohr objects to this, and suggests a method of titration dependent upon the determination of the chlorine contained in the double salt. The salt is heated in a platinum crucible with oxalate of sodium until the mass is melted, by which the chloride of platinum is completely decomposed. The mass is then exhausted with water, and the chlorine is determined in the solution with one-tenth normal solution of silver. One-third of the silver solution required corresponds to the amount of potassa contained in the solution. Zeitschr. Anal. Ch., 1873, p. 137.

Chlorate of Potassium in the powdery (granulated?) form has, by Godeffroy, been found to contain nearly 2 per cent. of peroxide of manganese; while the cheaper, crystallized variety he found invariably chemically pure. The author ascribes this circumstance to some new method pursued by the manufacturers, as the granulated salt had heretofore been found, in the German (Austrian) markets, of unexceptionable purity. Zeitschr. Œst. Apoth. Ver., 1873, No. 17, p. 297.

Potash Salts produced at Stassfurt.—In a paper published in the "Moniteur Scientifique," June, 1873, Theodore Becker gives a detailed account of the manufacture of potash salts at the Stassfurt mines. The saline deposit, which is reached after boring through 260 metres of sandstone, gypsum, and marl, is divided into four chief regions, of which the lowest bed is the largest, being 240 metres in thickness, and is composed entirely of rock salt. The next region, about 64 metres thick, is still composed of rock salt, but is intersected by veins, 2 to 3 centimetres thick, formed of *polyhalite*, a mineral composed of the sulphates of calcium, magnesium, and potassium. The next stratum, about 56 metres thick, contains 65 per cent. of chloride of sodium, 17 per cent. of kiserite, 13 per cent. of carnallite, 3 per cent. of chloride of magnesium, and 2 per cent. of karstenite. Finally, the upper layer consists of a group of salts chiefly potassic and magnesic, which were formerly called *riddance salts*, because they were at first without industrial application, and were merely extracted to reach the rock salt below. Now these salts are the foundation of the trade of Stassfurt. The principal salt is *carnallite*, a chloride of magnesium and potassium; besides which the deposit contains: *Sylvine* or *Howellite*, a chloride of potassium containing often $KOSO_3$, MgCl, and $MgOSO_3$; *Tachyhydrite*, a carnallite in which the KCl is replaced by CaCl; *Boracite*, a combination of borate and chloride of magnesium; and, finally, *Kainite*, a compound of $MgOSO_3$ and MgCl. The author's memoir contains a full account of the purification of the salts as obtained from the mines; Stassfurt exporting *chloride of potassium*, used in the manufacture of $KONO_5$ and $KOCO_2$; *sulphate of magnesium; chloride of magnesium*, used extensively in England to increase the weight of textile fabrics; *bromine*, in quantities sufficient almost to supply the consumption of Europe; and boracic acid. The residuary, impure salts, finally, are skilfully combined and sold as *mineral manures*, more or less rich in potassa and magnesia; the demand for which has of late years increased greatly both in England and Germany. Chem. News, July 11th, 1873, p. 24.

SODIUM.

Caustic Soda.—A new method for its preparation is proposed by Helbig. The crude lye is evaporated in cast-iron boilers. At a certain temperature the cyanides contained in the pasty mass are decomposed with evolution of ammonia, and deposition of carbon. The heat is then raised to redness, and the mass becomes more fluid. A sheet-iron cover is then fitted upon the boiler, provided with an opening through which enters an iron pipe, which is plunged into the mass, and air is forced in. The graphite which separates rises to the surface and may be collected, and the mass is tested from time to time to see if the sulphur is perfectly oxidized. When this is the case the blast is discontinued, the mass allowed to become clear, and run off as usual. Chem. News, Sept. 26th, 1873, from Les Mondes, Sept. 11th, 1873.

Soda Manufacture.—The observation already made by Wagner, that when carbonate of barium is suspended in solution of sulphate of sodium, and is then treated with carbonic acid, bicarbonate of sodium is formed, and sulphate of barium is precipitated, has been the subject of further experiments by G. Bunge, who finds the method to be applicable to the industrial production of perfectly pure sal soda. The sulphate of sodium is dissolved in 12 parts of water for this purpose. The carbonate of barium becomes soluble by the action of carbonic acid, and as fast as it is dissolved it reacts upon the sodium salt, forming bicarbonate of sodium. The action is facilitated by an appropriate stirring arrangement. Arch. Ph., Jan., 1874, p. 63; Ding. Polyt. Jour.

Alkalimetry.—The difficulty experienced in making alkalimetric determinations with litmus by the light of an ordinary flame is, according to L. d'Heuy, entirely avoided by the use of the yellow flame produced by sodium salts. Tincture of litmus, which in daylight appears either blue or red, appears by the ordinary artificial light always more or less red. Viewed by the yellow light produced by sodium salts, however, the red litmus appears *colorless*, while the blue litmus appears opaque and black, thus rendering the reactions, when viewed by the sodium flame, far more distinct than is possible by daylight. Ph. Centralhalle, 1873, No. 27, p. 229.

Normal Solution of Soda.—Mr. W. N. Hartley had recommended the use of bright metallic sodium for preparing a normal solution of soda for determining the litre of normal acids, and Mr. H. Fresenius has experimented with a view to the determination of the value of this method over the use of carbonate of sodium usually employed. He finds the proposition of Mr. Hartley completely justified, and recommends it as reliable. A weighed quantity of the sodium is dissolved in alcohol, and diluted with water to the proper degree. Zeitschr. Anal. Chem., 1873.

Normal Acid.—The following method of preparing a normal acid is recommended by Mr. George Duerr, who states that it is both easy and accurate: Dilute HCl with ten times its volume of water, pass an excess of sulphhydric acid through the mixture, and boil for a few minutes; allow to settle, and filter, or decant from precipitate. It is next distilled until nine-tenths of the acid has distilled over, and the distillate is reduced to about 1.020 sp. gr. A piece of Iceland spar (about 8 to 10 grammes) is to be accurately weighed and placed into a flask together with 100 c.c. of the acid as prepared above. A chloride of calcium tube, filled with pieces of glass, is to be fitted to the flask. A few drops of solution of litmus, which must be just blue, is to be poured through the chloride of calcium tube into the flask. The contents of the flask must be kept boiling gently until the litmus turns blue, then the remains of the crystal are to be taken out, washed, dried, and reweighed. The loss in weight of the crystal indicating the strength of the acid, the latter can now be standardized. As the litmus in the CaCl tube remains blue, we know that there has been no loss of acid. Chem. News, Sept. 19th, 1873, p. 156.

Chloride of Sodium.—In a private communication of Mr. Gustav Rose, shortly before his death, to Dr. Buchner, he describes a simple method by which he readily obtained perfect crystals of chloride of sodium. Nephelin, or phonolith, in small fragments, is covered with muriatic acid, and the glass vessel in which the mixture is contained is allowed to stand undisturbed for months. A thick gelatinous mass (silica) is formed, from which, in the course of time, the crystals separate, and are then washed with alcohol to remove the gelatinous silica. Perfect hexahedrons, with planes three lines long, and perfectly transparent, were so obtained. N. Rep. Ph., 1873.

Bisulphite of Sodium is recommended as a substitute for the hyposulphite, so generally used for removing the chlorine retained in the various fabrics undergoing the bleaching process. By the use of hyposulphite a portion of sulphur is retained in the fabric, and this, by subsequent oxidation, is gradually converted into sulphurous and, finally, sulphuric acid, and thus liable to destroy or weaken the fabric to a greater or less degree. This effect is entirely avoided by the use of bisulphite, which also possesses an advantage over the sulphite, now and then used for the purpose, by removing the chlorine of a much larger quantity of material, and being, therefore, relatively cheaper. Ph. Centralhalle, 1874, No. 6, p. 43.

For an application of this salt, during the process of mashing grain, see Alcohol, in this report.

Sulphate of Sodium.—It is stated in Rép. de Pharm. that a deposit, equal to 15,500,000 cubic feet of sulphate of sodium, has been discovered in the mountains of the Caucasus. In certain places the deposit is nearly pure, containing only about 9 per cent. of foreign matter. The layer is about 5 feet thick, and beneath a bed of marl (1 foot), soft clay (2½ feet), and bituminous clay impregnated with salts (9 inches). Ph. Jour. Trans., Nov. 22d, 1873, p. 408.

AMMONIUM.

Ammonia.—Mr. W. F. Donkin has succeeded in forming ammonia by *direct synthesis* in the following manner: A mixture of about three volumes of hydrogen and one of nitrogen in a bell-jar over water, was passed through two tubes containing pumice moistened with alkaline pyrogallate and sulphuric acid respectively, then through a Siemen's induction-tube, and into a bulb containing hydrochloric acid. About a half litre of the gas was passed through the bulb, contained in a proper apparatus, the induction-coil not being in action, and another bulb was then substituted, containing an equal volume of hydrochloric acid, another half litre of the mixed gases passed into it, submitting them at the same time to the action of electricity. Upon applying Nessler's test, the contents of the first bulb gave a yellow coloration, the second a rather thick reddish-brown precipitate, indicative of ammonia. No attempt was made to estimate the quantity of ammonia formed. The author explains that, since writing the account of his experiment, made March 24th, 1873, his attention had been drawn to the Comptes Rendus of April 22d, 1873, to a note of an experiment by Messrs. Thénard of Paris, in which they observe the formation of traces of ammonia by the action of electricity on a mixture of hydrogen and nitrogen; but no details of the mode of operating are given. Pharm. Jour. Trans., June 21st, 1873, p. 1015.

Ammonia.—J. Moddermann has found sulphate of copper to be a very sensitive reagent for ammonia. If the salt is dissolved in the necessary quantity of distilled water, a clear solution is formed; but if it is strongly diluted with a further quantity of distilled water, a greenish turbidity results, and a similarly colored precipitate subsides. The cause of this is the presence of very minute quantities of ammonia in the distilled water. The precipitate is basic sulphate of copper. Ph. Centralhalle, 1874, No. 4, p. 27.

Nessler's Test.—According to J. Alfred Wanklyn, the differences in the time required for the development of the Nessler color, so frequently subject of controversy, have their origin in the differences in the quality of the Nessler reagent. These differences depend, to a great extent, whether or not a sufficient quantity of solution of corrosive sublimate has been added to the finished Nessler solution, and may be obviated by careful preparation of the reagent. Chem. News, July 11th, 1873, p. 13.

Dr. G. C. Wittstein finds that Nessler's test is not as delicate as that proposed by Einbrodt. This differs from Nessler's by the substitution of corrosive sublimate for red iodide of mercury. If to 100 c.c. of water 1 drop of solution of muriate of ammonium, followed necessarily by 1 drop of solution of potassa, and 1 drop solution of corrosive sublimate, be added, a distinct white opalescence is produced. If the experiment be now repeated, substituting 5 drops of Nessler's reagent for the corrosive sublimate, neither coloration nor turbidity is produced, even if the addition of Nessler's reagent be continued. Arch. Pharm., Nov., 1873, p. 397.

During the distillation with caustic potassa, of substances in which the ammonia is to be determined, the presence of solid bodies, either originally present or precipitated by the caustic lye, often causes violent concussion, if the process is conducted over direct flame, and thus, not unfrequently, causes the loss of a portion or the entire quantity of the test substance. To avoid this Dr. Rudorff resorts to steam, which he finds will enable heating to the boiling-point, even if the liquid boils at much higher temperature than that of boiling water. The distillation is conducted in a flask of 300 to 400 c.c. capacity, which is provided with a tube for the introduction of the steam, with another for its exit, and with a short third tube —provided with a short rubber tube and closed by a clamp— through which, towards the end of the process, he allows some steam to pass, and then tests with litmus for ammonia. The exit-tube is connected with a well-cooled receiver, which is well closed and ends in a bulb-tube, containing some normal sulphuric acid, to condense any escaping ammonia. When the distillation is completed, the distillate is titrated for ammonia, by the usual methods, with normal sulphuric acid. Ph. Centralhalle, 1874, No. 7, p. 49.

Ammoniacal Salts.—In a paper read before the British Pharmaceutical Conference, Mr. Alfred Payne, F.C.S., details his experience in the manufacture of ammonia and its salts, the source of which, up to 1840, was exclusively bone-liquor, but which is now almost exclusively prepared from the ammoniacal liquors of gas-works. The various preparations of ammonia, *i.e.*, liquor ammonia, sesquicarbonate, hydrochlorate, and nitrate of ammonium, may, owing to the difficulty of complete purification, contain various impurities, such as hydrocarbon oils (in liquor ammonia), phosphate, arsenic, and various other metals. To determine the freedom from these, the liquor ammonia should be tested with either nitrate of bismuth or nitrate of silver, with which a clear colorless solution is formed, if hydrocarbon oils are absent. The various salts are tested for *phosphates* by rendering slightly alkaline, and testing with a soluble magnesia salt; for *arsenic* by Marsh's test, using magnesium instead of zinc; and for other metals, in acid solution by sulphuretted hydrogen, and in alkaline solution by sulphide of ammonium. If the ammoniacal preparations will pass this ordeal, and meet these reagents, without cloud, tint, or other indication of impurity, they may be regarded as perfect, and fit for any purpose in pharmacy or the arts.

Prof. Attfield, in this connection, draws attention to another source of ammonia—to *volcanic ammonia*—and states that this source is now introduced to pharmacists. Mr. Booth also draws attention to the ammoniacal liquors, obtained in the preparation of a charcoal from the waste product of woollen mills. The ammoniacal liquor is used principally for scouring and washing purposes. Pharm. Jour. Trans., Sept. 23d, 1873, pp. 252–253.

Sulphate of Ammonium.—A new source for sulphate of ammonium is proposed by L. L'Hote, which consists in utilizing the refuse of wool, skin, leather, horn, feathers, sponge, etc. These are now occasionally used in the preparation of manure, but, containing from 6 to 15 per cent. of nitrogen, are more profitably utilized as suggested by the author. His process consists in treating these refuse substances with a solution of commercial caustic soda, dissolved in 9–10 parts of water, either at the ordinary temperature or with but gentle heat. The substances are thus either dissolved or completely disintegrated. The gelatinous liquid obtained is mixed with slacked lime to form a thick paste, is introduced into an iron retort, and distilled into a receiver containing chamber acid. Towards the last the retort is heated to redness in order to insure the complete disengagement of ammonia. The residue in the retort consists of caustic soda and lime, which are separated by solution of the caustic soda, and may be used for the next operation. The sulphate of ammonia requires purification by crystallization. Pharm. Centralhalle, 1873, No. 43, p. 363.

BARIUM.

Hydrated Peroxide of Barium.—Jul. Thomson recommends its preparation for the purpose of preparing peroxide of hydrogen, as follows: Finely powdered commercial peroxide, or the so-called hydrate, is dissolved in muriatic acid to neutralization. To the filtered and cooled solution baryta-water is added in sufficient quantity to precipitate foreign oxides and silica, and until a faint precipitate of hydrated peroxide of barium forms. The precipitate is then filtered off, and the clear solution is treated with concentrated baryta-water, which throws down the hydrated peroxide of barium. This is washed upon a filter until the washings no longer evidence hydrochloric acid, and is then transferred to well-stoppered glass vessels, in which it will keep unchanged for a long time. Zeitschr. Œst. Apoth. Ver., 1874, No. 7, p. 119.

CALCIUM.

Chalk (English), which had been used with advantage in the manufacture of cement (hydraulic ?), was found by A. Vogel to contain 98.5 per cent. of carbonate of calcium, 0.46 per cent. of phosphate of calcium, and 0.786 per cent. of brown residue, when the chalk was treated with hydrochloric acid. This residue contained 48 per cent. of organic matter, and this 1.1 per cent. of nitrogen, corresponding to 7 per cent. of protein substances. N. Rep. Ph., 1873, No. 7, p. 391.

Monophosphate of Calcium is, according to the experiments of K. Birnbaum, quite hygroscopic. A portion of pure monophosphate, which, after being dried over sulphuric acid, weighed 1.339 gramme, when exposed to the air of the laboratory and weighed daily, fluctuated from 1.478 to 1.504 gramme. If placed over water the weight rose in three days to 1.876; and on being again exposed freely to the air for three days it fell to 1.501. The same phenomenon, though to an inferior extent, may be observed with superphosphate. Chem. News, Aug. 22d, 1873, p. 98; Ber. d. Chem. Ges., July 28th, 1873.

Phosphate of Calcium.—M. Coirre makes some practical remarks on the administration of phosphate of calcium, and recommends that it be given in solution with a little hydrochloric acid, a few drops of which will suffice to dissolve one gramme of chemically pure bibasic phosphate of calcium in a tablespoonful of water. When this compound is administered in its undissolved state, a small portion, it is true, will dissolve by the aid of the acid contained in the gastric juice, but the greater part passes into the fæces, and is lost. Hydrochloric acid is the most appropriate solvent, as it acts in producing by other ways the results sought by the administration of phosphate of calcium. Ph. Journ. Trans., July 5th, 1873, p. 5, from L'Abeille Médicale.

MAGNESIUM.

Magnesia.—Sarrazin substitutes a cast-iron crucible for the Hessian crucibles usually employed for calcining magnesia, and finds this not only more economical—there being less fuel required and a larger quantity of magnesia calcined per diem—but he also obtains a more uniform product. The iron crucible has a capacity of eight to ten litres, is provided with a cover of tinned iron, the smaller half of which may be opened or closed at pleasure, and through the centre of the cover is provided with a stirring arrangement with three arms, "similar to that used in coffee-roasters." The crucible is filled to fully two-thirds its capacity with sifted carbonate of magnesium, is then placed in the furnace, so as to extend slightly over the hearth-plate, and subjected to the heat of a strong wood or peat fire; the smaller half of the cover being open during the first stage of the operation to permit the escape of aqueous vapor, and only closed from time to time to permit thorough stirring of the contents. As soon as aqueous vapor ceases to be given off the lid is closed and the heat is raised to redness, at which it is continued until a sample no longer evidences carbonic acid.

The operation is finished in three, or at the utmost four, hours, when the contents are transferred to a large copper vessel, and, the crucible being filled as before, the operation is renewed. Arch. Ph., Jan., 1874, p. 51.

ALUMINIUM.

Chloride of Aluminium.—The ordinary method of preparing this compound consists in passing chlorine through a mixture of pure alumina and charcoal, heated to redness. Mr. Paul Curie finds that the use of pure alumina may be dispensed with when the process devised by him is followed, even ordinary clay answering the purpose. This process is based upon the conversion of the alumina into sulphide of aluminium, and subsequently of the sulphide into chloride, the two operations being condensed into one as follows: The alumina is placed in a porcelain or earthen tube, and heated to redness. As soon as all the water is expelled from the alumina the tube is connected at one end with a receiver, and at the other end with a tube, bringing in a mixture of hydrochloric acid gas and bisulphide of carbon. By its passage through bisulphide of carbon the hydrochloric acid gas becomes so thoroughly saturated with the bisulphide that it is not necessary to heat the latter. A double reaction takes place simultaneously, and chloride of aluminium distils over, mixed with S and HS. The salt is purified by redistillation with iron filings. Chloride of silicium, if formed, escapes as a gas, while any chloride of iron or calcium, being less volatile than chloride of aluminium, remains in the tube. The process can be easily adapted to the production of other protochlorides, and the author has succeeded well in forming the chlorides of magnesium and chromium. Chem. News, Dec. 19th, 1873, p. 307.

Kaolin.—B. Hoff has found finely elutriated porcelain clay to serve an excellent purpose for clarifying wines. The author had previously used chemically pure alumina, with success, for the same purpose, but finds this to answer the purpose as well. See Wine, in this report. Zeitsch. Œst. Apoth. Ver., No. 6, 1874, p. 102.

Sulphate of Aluminum sometimes contains free sulphuric acid, which can be ascertained by treating the salt with alcohol, in which it is insoluble, but which dissolves the uncombined acid, acquiring thereby an acid reaction. Pure sulphate of aluminum imparts to decoction of logwood a dark violet color, which changes to brown in presence of free acid. Am. J. Ph., from Pharm. Centralhalle, 1873, No. 39.

MANGANESE.

Permanganic Acid.—If to perfectly dry powdered permanganate of potassium 1 to 1½ parts of sulphuric acid is added, the permanganic acid is, as fast as it is liberated, decomposed with formation of hydrated peroxide of manganese and liberation of oxygen. The oxygen so liberated has, according to Böttger, the most intense oxidizing properties, and acts especially energetic upon essential oils, producing in some instances violent explosions when ten to twelve drops of the oil, contained in a small capsule, is brought in contact with the end of a glass rod which has been dipped into a mixture made as above mentioned. Others are simply inflamed, although, even in these instances, the experiment must be conducted with caution, else explosion may result. Alcohol, ether, methylic alcohol, benzole, chlorallyl, bisulphide of carbon, simply burn. Cotton is also inflamed, but gun-cotton and gunpowder, strange to say, are not. If coal gas is brought in contact with the mixture it is immediately ignited. N. Rep. Ph., 1874, No. 3, p. 177.

IRON.

Ferrous Anhydrosulphate.—Mr. T. Bolas found that on mixing a cold saturated solution of ferrous sulphate with nine times its volume of concentrated sulphuric acid, a white crystalline mass is formed as the mixture cools, or immediately if the solution of iron is supersaturated. Under the microscope this powder is seen to consist of minute prismatic crystals resembling Glauber's salt in form. Collected by means of a Bunsen's pump, and dried on a porous tile, they are found to have the composition of ferrous anhydrosulphate, FeS_2O_7 ($O = 16$). Exposed to moist air they absorbed water, and gave a salt of the composition $FeSO_4CH_2O$ ($O = 16$), but, when treated with water, they yielded ordinary green vitriol. Chem. News, Dec. 26th, 1873, p. 324.

COBALT.

Chloride of Cobalt.—The property which this salt possesses, to appear of a deep, dark-blue color in its anhydrous condition, while in a moist state it appears red, has been proposed by W. B. Woodburry as a hygrometer, which consists simply of strips of paper saturated with a concentrated solution of chloride of cobalt, containing a little common salt and gum arabic. Such paper is blue in dry atmosphere, while in moist atmosphere it shows, according to the degree of moisture, various tints from blue to rose red. A. Vogel suggests the usefulness of this property to detect water in glycerin, and in various ethereal and alcoholic liquids. N. Rep. Ph., 1873, No. 6, pp. 353–354.

INDIUM.

Sulphate of Indium and Ammonium has been obtained in well-characterized form by C. Rössler by mixing solutions of sulphate of indium and sulphate of ammonium in atomic proportion, evaporating, and allowing to stand in the cold for some time, when handsome octahedrons crystallized out. The composition proved to be $In_2O_3(NH_4)_2O,4SO_3+18H_2O$ ($O = 16$), but the author found that the crystals had lost a portion of their water of crystallization, and, selecting a well-formed, air-dry crystal, he obtained results which correspond completely with the theoretic composition: $In_2O_3(NH_4)_2O,4SO_3+24H_2O$ ($O = 16$). This result is important, as the atomic weight of indium had hitherto been assumed to be 113.4 (as corrected by Bunsen), and while the relation of the hitherto known compounds of indium was not contradictory to the formula In_2O_3 ($O = 16$) for the oxide, no well-characterized compound had been formed by which the correctness could be proven beyond doubt.

The above compound melts already at 36° C. (= 96.8° F.), although not completely, the liquid portion being composed of solution of the alum, while the solid portion is composed of a salt containing less water. The alum is very freely soluble in water, but is insoluble in alcohol.

The author failed to succeed in producing an indium alum with either potassa or soda, the compounds produced containing but 8 molecules of water. Arch. Pharm., August, 1873, p. 167; Journ. Prakt. Ch., 1873.

CHROMIUM.

Chrome alum is prepared by A. Lielegg as follows: 29.5 parts bichromate of potassium are dissolved in 39 parts concentrated sulphuric acid, and as much water as is necessary to the solution of the bichromate, and, after the mixture has cooled, 38 parts crystallized oxalic acid are added gradually with continual stirring. Reaction commences immediately, carbonic acid is eliminated, and the filtered liquid yields, upon spontaneous evaporation, crystals of chrome alum. N. Jahr. Ph., 1873, p. 216; from Polyt. Journ.

ZINC.

Zinco-magnesic Chloride has been produced by G. Warner, who obtained it by dissolving in a hot solution of chloride of zinc, chloride of magnesium to saturation. The solution of chloride of zinc is concentrated to sp. gr. 1.6 before the addition of the chloride of magnesium, by this means avoiding the partial decomposition of the magnesium salt, which must ensue during the prolonged evaporation necessary to obtain the right degree of concentration for crystallization. Upon cooling a crystalline mass is obtained, which, when drained and recrystallized, produces the double salt in extremely deliquescent rhombic prisms with truncated summits, of composition $ZnCl_2,MgCl_2,6H_2O$ ($O = 16$). Chem. News, Oct. 10th, 1873, p. 186.

Calamine.—Th. Rosenstadt draws attention to the variability of commercial calamine, which, according to the source from which obtained, varies not only greatly in color, but also in its solubilities in acids and alkalies, and in its component parts. That from England (Somersetshire and Derbyshire) meets the requirements of the Russian Pharm. most closely, and is of the proper color (light-red or rose color); while that found in Ampsin is brown-red; that from Hessenberg, greenish-brown; from Maresnet, brown; from Altenberg, yellowish-white; from Nertschinsk, bluish in color. The solubilities of these varieties in acids and alkalies varies between 30 and 90 per cent. In them are found, besides carbonate of zinc, the carbonates of lead, iron, manganese, lime, and magnesia, and silicate of zinc These facts, and the demand which still exists for the ointment of calamine, induce the author to suggest the preparation of the latter with artificial calamine, made by mixing 1 part of red oxide of iron and 20 parts of carbonate of zinc. Ph. Zeitschr. Russ., 1873, No. 19, p. 579.

COPPER.

Cuprous Chloride.—A simple method of its preparation consists, according to Prof. Böttger, in mixing solutions of cupric chloride with a solution of stannous chloride; the two substances are decomposed, forming stannic chloride and cuprous chloride, the latter precipitating, and only requires washing with a little water. Ph. Centralhalle, 1874, No. 3, p. 20.

LEAD.

Lead.—M. Dumas finds that distilled water acts very rapidly upon lead, whilst waters containing more or less calcareous salts dissolved none; in fact the effect produced by traces of lime in preventing the action upon lead is surprising. The experiments were made with shot, and the bottles were only partially filled with the following waters: Distilled water, rain-water, Seine water, Ourcq water, and well-water. Chem. News, Dec. 19th, 1873; from Compt. Rend., Nov. 10th, 1873.

These experiments are supported by the experiments of Le Blanc, whose tables show that very pure water, such as that from the wells of Grenelle, though possessing much less saline matter than Seine water, has yet the property of preserving lead from oxidation during long contact. Rain-water, even, does not attack the lead, unless it has been received after a sort of prolonged washing of the atmosphere by rains. Belgraud has analyzed the water used in Paris dwelling-houses; no less than 1,580,000 metres of lead pipe being in use as distributers from the mains, and among the latter (1,400,000 metres), 3000 metres are of lead, and found no traces of lead. He concludes that when water becomes insensible to the action of reagents for lime, it begins to attack the lead rapidly, like distilled water. Ibid.

Galena.—According to E. Jannetaz, a fragment of bisulphate of potassium, when thrown upon coarsely pounded galena, produces a distinct odor of sulphuretted hydrogen, and when the two bodies are ground together the odor becomes almost insupportable. Sulphuric acid does not produce the same effect; neither do the various other sulphides, such as that of antimony, iron, mercury, silver, etc. Blende gives a sulphhydric odor, but less intense. Chem. News, Nov. 21st, 1873, from Compt. Rend., Oct. 13th, 1873.

Iodide of Lead.—According to A. Michaelis and G. Koethe, iodide of lead can be completely transformed by sulphite of sodium into sulphite of lead and iodide of sodium. By the action of an excess of sulphurous acid in the cold, iodide of lead is partially convertible into sulphite of lead and hydriodic acid; but at a higher temperature the transformation is almost complete. Chem. News, Oct. 10th, 1873, from Ber. d. d. Chem. Ges., Sept., 1873.

Sulphate of Lead is found by H. C. Debbits to be soluble in the acetates of sodium, calcium, manganese, zinc, nickel, and copper; while the acetates of silver and mercury have no such action. Acetate of barium, at common temperatures, partially converts the sulphate of lead into acetate of lead, and forms sulphate of barium; the inverse reaction does not take place. Chem. News, Nov. 21st, 1873, from Bull. Soc. Chim., Oct. 5th, 1873.

Chromate of Lead being frequently contaminated with sulphate of lead, E. Duvillier has devised a method for the quantitative determination of the latter, which is dependent on the insolubility of the sulphate in nitric acid of sp. gr. 1.42, and alcohol. Dr. Julius Lowe proposes instead the use of hyposulphite of sodium, which has the property of dissolving the sulphate of lead and leaves the chromate absolutely intact. The amount of sulphate is determined quantitatively by passing sulphuretted hydrogen through its solution in the hyposulphite. The method may also be advantageously employed industrially for removing the sulphate from the chromate; the solution of sulphate being utilized by the addition of neutral chromate of potassium, which precipitates the lead as chromate. Pharm. Centralhalle, 1874, No. 6, p. 44; Polyt. Notisbl.

VANADIUM.

Vanadium.—In the so-called Bohn-iron ores, R. Böttger has found vanadium as a constant, variable, but, comparatively, large constituent. By mixing the finely powdered ore with nitre and caustic soda, exposing the mixture for a short time in a Hessian crucible to a red heat, extracting the cooled mass with boiling water, and adding to the filtrate nitric acid, free from nitrous acid to near saturation, the alumina and silica, contained in the ore, are separated. By the addition of nitrate of barium to the filtrate, insoluble vanadate of barium is deposited, from which, by digestion with diluted sulphuric acid,

Vanadic acid is readily obtained. From this its various salts are readily prepared, and among these

Vanadate of ammonium finds very good application in the preparation of an excellent black ink, for which purpose it was already recommended by Berzelius. (See Vanadium Ink, in this report.) Ph. Centralhalle, 1873, No. 39, p. 350.

MOLYBDENUM.

Chlorides of Molybdenum.—Dr. L. P. Liechti and Bernhard Kempe have obtained a new compound of chlorine and molybdenum—the brown tetrachloride—$MoCl_4 (O = 16)$. It was obtained by heating the red, sparingly volatile trichloride, $MoClO_3$ $(O = 16)$ in carbonic acid free from oxygen, when it is split into the yellow dichloride—$MoClO_2$ $(O = 16)$, and the tetrachloride, which sublimes. The authors have also redetermined the atomic weight of molybdenum. Taking O = 15.96; Ag = 107.66; Cl = 35.37; S = 31.98; then Mo = 95.75 to 95.94, showing a mean value of 95.86. The determination of Dumas was 95.65; and that of Debray, 95.66 to 95.84. The pentachloride, $MoCl_5$ (O = 16), was found to be distinctly crystalline; may be fused and volatilized without decomposition, and, on fusion, congeals to a black, radiating, crystalline mass. A green reflection shows the presence of oxychloride. Its vapor is deep brownish-red. It is obtained by the action of dry chlorine, perfectly free from air, upon molybdenum. Chem. News., Oct. 10th, 1873, p. 196, from Ber. d. d. Chem. Gessl., Sept., 1873.

TELLURIUM.

Tellurium.—According to G. Kustel, the presence of tellurium in ores is detected—if it is present as telluride of gold—by sodium amalgam. The powdered ore is placed in a capsule with a little water and mercury, and afterward a little sodium amalgam is added. If tellurium is present, the water takes a violet tint. This tint may be masked, however, if sulphide of iron is present, by the precipitate occasioned. In such cases the water is poured off, a fresh quantity of water added, and the test is recommenced with a fragment of sodium amalgam. Chem. News, Oct. 31st, 1873, from Bull. de la Soc. Chim., Sept., 1873.

Tellurous Acid is, according to F. Stoltz, reduced by glucose when mixed with an excess of alkali. If the solutions are dilute, and a large quantity of glucose be employed, the whole of the tellurium is deposited as a black powder. Selenious acid is not reduced under the same circumstances. Chem. News, Oct. 31st, 1873, from Bull. de la Soc. Chim., Sept., 1873.

BISMUTH.

Bismuth.—The discovery of a deposit of bismuth as sulphide and—preponderating—oxide, in the department of Corrège, France, has been announced, and is said to be the first bismuth mine that has been worked in France. The mineral, containing 70 per cent. of bismuth, is extracted by hydrochloric acid, and the metal is precipitated by bars of iron, and then purified from a little lead and arsenic in the usual manner. The deposit also contains molybdate of lead, tungstate of lime, and mispikel. Ph. Jour. Trans., Nov. 22d, 1873, p. 408.

C. Méhu had for some time been engaged in determining a more advantageous and certain method for the purification of bismuth from sulphur and arsenic, than that by means of nitrate of potassium, of the Codex, and by his experiments has demonstrated—(1) The ready formation of alloys of bismuth with the alkaline metal. (2) The necessity of preparing the subnitrate of bismuth with ingredients of irreproachable purity. (3) The influence of the alkaline metals in removing from bismuth the last traces of sulphur and arsenic left by roasting. Based upon these facts, the author proposes the following method for the purification of bismuth: Melt the metal in a vessel presenting a large surface, at a temperature considerably above its fusing-point. The result is an oxidation of one-fourth of the metallic mass and a disengagement of sulphurous and arsenious acids. Let the metal cool, and then reduce the mass to powder, mixing with it the oxide of bismuth. Then add carbonate of potassium (one-fourth of the weight of the original metal)—quite free from sulphates—charcoal, and dried soap. Place the mixture into a crucible which will be about five-sixths filled by it, and then complete the filling with well-washed vegetable carbon. Cover the crucible, and keep it for about an hour at a red heat. At the end of that time run the metal into a mould, or, better still, let the crucible cool, when at the bottom will be found a button of bismuth, alloyed with potassium.

To free the alloy from potassium, the author says nothing is easier. For this it should be melted in a porcelain capsule or iron vase exposing a large surface. Gradually the alkaline matter oxidizes, and a layer of caustic potash forms upon the surface. The process is ended as soon as a yellow-brown layer of oxide of bismuth begins to form, when it is run off.

During the oxidation it is necessary to throw the layer of caustic potash—which protects the bismuth from oxidation—aside, and this is accomplished more readily if from time to time fragments of wood, paper, starch, etc., be thrown in, which convert it into the less fusible carbonate. A small quantity of bismuth is dissolved by the alkali. Pharm. Jour. Trans., Nov. 1st, 1873, p. 341; Annuaire Pharm , 1873.

Bismuth.—MM. Buisson and Ferray suggest a method of determining bismuth, which is based upon the complete precipitation of bismuth in acetic solution by iodic acid; iodate of bismuth, $Bi_2O_3,3IO_5$, being an anhydrous white powder, insoluble in water and acids. The method is applicable to the determination of all compounds into which bismuth enters. Chem. News, Nov. 14th, 1873, from Moniteur Scientifique, Oct., 1873.

ARSENIC.

Arsenic.—Mr. M. Carl has conducted various experiments with the result of showing that sugar, mixed with magnesia, may serve as an antidote to arsenious acid; the use of hydrated magnesia also proving most valuable. Med. News, Oct., 1873, p. 166, from Lancet, Aug., 1873.

Arseniuretted Hydrogen.—In 1865 Mr. Th. Humpert communicated (Jour. Prakt. Ch.) that by passing arseniuretted hydrogen into concentrated sulphuric acid a solid modification of arseniuretted hydrogen is obtained. This induced Mr. G. C. Hübner to investigate the subject, who obtained also a brown precipitate, which, after decanting the acid, and washing with water until chloride of barium no longer gave a precipitate, proved to be finely divided metallic arsenic. At all events it contained no hydrogen, and the author concludes that by the methods heretofore recommended a solid modification has never been prepared. Arch. Pharm., Aug., 1873, p. 166.

Iodo-Arsenic Acid.—Prof. Sylvestro Tinno has obtained a new compound corresponding to arsenic acid, in which 2 equivalents of oxygen are substituted by 2 equivalents of iodine. He obtained it by dissolving iodine in a boiling solution of arsenious acid until the solution had acquired permanent color, indicating excess of iodine. The solution is then filtered through wood-charcoal, evaporated upon a water-bath until it begins to lose its transparency and acquires a little color, and is then set aside in a cool place, when, after several days, extremely small, glistening, colorless crystals of iodo-arsenic acid are deposited upon the bottom and sides of the vessel. The new acid forms when dry a white crystalline powder; 100 parts of water dissolve 3.24 parts at moderate temperature and 9.33 parts; 100 parts alcohol of 85 per cent. dissolve 5.16 parts. In ether and benzin it is nearly insoluble. It is decomposed by exposure to light and air; by heating in the dry state, and by prolonged boiling in aqueous solution; by chlorine water, nitric, sulphuric, and hydrochloric acids, and by sulphuretted hydrogen. It forms salts with the alkalies, an acid compound with iodide of potassium (iodo-arseniate of iodide of potassium), and affords precipitates with sulphate of copper, ammonio-sulphate of copper, nitrate of silver, bichloride of mercury, acetate of lead, and chloride of gold. Its composition is AsO_3I_2. N. Rep. Ph., 1873, No. 7, pp. 385–390.

ANTIMONY.

Antimonic Blue (*so called*). — C. Krauss has proved that this new pigment is a compound of cyanogen and iron, and that antimony is not necessary for its formation; it is obtained by boiling ferrocyanide of potassium in muriatic acid, hydrocyanic acid gas being copiously evolved, and the production of the pigment is hastened not only by metallic antimony, but also by antimonic chloride and by solutions of mercury. When first produced the color of the precipitate is often green, but on exposure to the air it invariably changes to blue. Am. J. Ph., Jan., 1874, from N. Rep. Ph., 1872.

The above compound was mentioned in the report for 1873 under this heading.

MERCURY.

Mercury, in excretions and specially in urine, is determined by Mayencon and Bergeret by immersing in the fluid an iron nail to which a piece of platinum wire is attached, and acidifying the fluid to such an extent that hydrogen is slowly evolved. The mercury is deposited upon the platinum wire, which is removed after a reaction of about a half hour, and exposed to chlorine vapor, by which the mercury is converted into corrosive sublimate. The wire is then rubbed gently over a piece of filtering-paper, feebly moistened with a one per cent. solution of iodide of potassium, when, if mercury has been contained in the fluid, this is evidenced by the production of red iodide of mercury. The process is rapid and exceedingly delicate, the author having succeeded in determining its presence in the urine of persons after the internal administration of corrosive sublimate and the local use of mercurial ointment. Ph. Centralhalle, 1873, No. 37, p. 317.

The injurious influence of mercurial vapors in looking-glass factories, etc., is, according to J. Meyer, entirely obviated if, after the day's work, about one-half litre of ammonia-water is sprinkled over the floor of the shops. N. Jahr. Ph., 1873, p. 230.

Crystallized Protiodide of Mercury has been obtained by P. Yvon by heating in a sand-bath, in a sealed flask, iodine and mercury in the proportion indicated by their equivalents, at a temperature not to exceed 250° C. (= 492° F.). Upon removing the flask from the sand-bath the upper part of the flask is hung with crystals of a beautiful red color, which become yellow on cooling. The crystals so obtained are well defined, yellow or slightly orange, and attain sometimes a pretty considerable size, especially when they unite to form spangles, some of which are 15 to 18 millimetres long. The smaller of these spangles are flexible. When heated the crystallized protiodide of mercury becomes red, the change commencing at 70° C. (= 194° F.), and the tint deepening more, until at 220° C. (= 428° F.), the crystals are of a magnificent garnet-red color. Upon cooling they reassume their primitive hues, and it is curious to compare this phenomenon with that—exactly the reverse—presented by the biniodide. If heated with precaution the crystallized protiodide sublimes entirely without decomposition. Submitted to analysis, the author obtained, as a mean of three operations, mercury, 61.17 per cent.; iodine, 38.76 per cent., numbers which correspond very closely with the theory. Ph. Jour. Trans., July 19th, 1873, from Compt. Rend., vol. lxxvi, p. 1607.

SILVER.

Nitrate of Silver.—According to Dr. Russell, solution of nitrate of silver is decomposed by a current of perfectly pure hydrogen, a precipitate of metallic silver resulting. This precipitation is quite independent of the action of light, but is increased by heat, and is even produced when the solution is exposed to an atmosphere of hydrogen. The author has conclusively proved that these phenomena are caused by the hydrogen displacing the silver in the silver nitrate, producing hydric nitrate, but a secondary effect also takes place between the nitric acid and the precipitated silver resulting in the formation of nitrite, and, as silver nitrite is not decomposed by hydrogen, the end product would be silver nitrite. Chem. News, Nov. 28th, 1873, p. 277.

Fused Nitrate of Silver, as met with in commerce, is variable in color, and often quite black. E. Bouilhou regards as the principal causes the presence of some chloride of silver, the decomposition during fusion of a portion of nitrate of silver, or the presence of some oxide of copper. White lunar caustic is sometimes even more impure in consequence of the addition of potassium nitrate. The author obtains unobjectionable results by the following manipulation: 20 grammes pure nitrate of silver, 5 grammes distilled water, and 1 gramme pure nitric acid are heated, with the precaution that the margin of the solution is not overheated. After the evaporation of the liquid the heat is carefully regulated, and after the salt has commenced to fuse it is often stirred with a glass rod to detach the solid mass when adhering to the sides.

When about three-fourths of the salt has liquefied, it is at once poured into a perfectly clean suitable copper mould, when the sticks are obtained of unobjectionable solidity and opaque whiteness. The residue in the capsule should be treated with water and nitric acid as before. Am. J. Pharm., from L'Union Pharm., Feb., 1874, p. 35.

PLATINUM.

Platinum Residues, in form of precipitates and alcoholic washings, are utilized by Th. Kösel by conversion into chloride in the following manner: The precipitates are placed into a porcelain capsule, mixed with caustic soda, heated upon a water-bath, and the alcoholic washings added. The reduction, which is rapid, is at an end when the liquid is almost colorless, and the platinum is obtained in a spongy state. It is then repeatedly washed with boiling water, first by decantation, and finally upon a filter, until the reaction of chlorine disappears, and is then dried and heated to redness, after which it is boiled in hydrochloric acid to remove impurities, and then dissolved in aqua regia. To remove nitrous acid the solution of chloride of platinum formed is repeatedly evaporated to dryness and redissolved in water, the solution being finally bleached in direct sunlight. Chem. News, Nov. 28th, 1873, from Ber. d. Chem. Ges., Oct. 27th, 1873.

ORGANIC CHEMISTRY.

HYDROCARBONS.

Hydrocarbons.—The well-known action of a spiral wire of platinum, previously heated to redness, upon the vapors of alcohol or ether, has been the subject of experiment, by J. J. Coquillion, upon the hydrocarbons toluen, formen, and ethylen. Toluen gives up 2 equivalents of hydrogen to form water with the oxygen, and yields aldehyde and benzoic acid. Formen yields formic acid, and ethylen produces acetic acid.

The action of palladium wire is more powerful than that of platinum. It becomes wrinkled on its surface, and breaks easily after having been in use for some days; moreover, it loses weight very distinctly. Chem. News, Sept. 5th, 1873; Compt. Rend., Aug. 11th, 1873.

Methane.—C. Schorlemmer has found that an intimate mixture of anhydrous acetate of sodium with more than twice its weight of lime and carbonate of sodium will, when heated, give off a very regular and quiet current of marsh gas. The gas thus obtained always contains some acetone, which is easily removed by shaking with water, or, better still, with a solution of bisulphite of sodium. Chem. News, Jan. 2d, 1874, p. 7.

Paraffin.—Dr. A. W. Miller, during his researches on the source and manufacture of the proprietary article "Cosmoline," became incidentally acquainted with the methods of the purification and manufacture of paraffin, as conducted in Philadelphia. The establishments for its manufacture are situated on the eastern banks of the Schuylkill, in the neighborhood of Gray's Ferry Arsenal. The process begins by subjecting the so-called residuum of the coal-oil refiners to distillation in large stills, made of five-eighths inch boiler iron, having a capacity of 1500 to 2500 gallons. Direct heat is applied immediately beneath the stills, the bottoms of which toward the end of the process reach a white heat. The distillate is condensed in a system of iron pipes, which are contained in large wooden tanks. Distillation begins at 220°, and is terminated at about 570°. The product is a thick, unctuous mass at ordinary temperatures, but it liquefies at about 100°, or a little over. It has the peculiar iridescent color and the characteristic odor of petroleum. The residue of the distillation is a hard, porous, black mass, which is free from odor, presents a close analogy to the coke of the gasworks, and is used as fuel to heat the stills. The distillate, which has thus been obtained, is next treated with from four to five per cent. of sulphuric acid, to *kill the green*, as it is termed by the workmen. After the removal of the acid by carbonate of sodium, the oily mass is introduced into bags, made of the material called duck, each of which holds about three or four gallons. A number of these are then placed horizontally in an ordinary screw-press, being superimposed on each other and separated by intervening boards. During the summer it is necessary to use ice in order to lower the temperature and prevent too much loss of paraffin. An oily product of a gravity of 25°, called commercially heavy paraffin oil and crude paraffin, are obtained. By subjecting the latter, which they designate as *wax*, to powerful hydraulic pressure, a second paraffin oil, of a gravity of 28°, is obtained. The residual paraffin is further purified by treatment with a variety of gazolin or benzin, which is specially prepared for this purpose. Two varieties of pure white paraffin are manufactured, namely, the ordinary hard article and another having a softer and more gelatinous consistence, which is termed gum stock, and is used exclusively for chewing gum. It is stated that these two varieties are separate and distinct, and that the one cannot be converted into the other. Amer. Jour. Pharm., Jan., 1874, p. 1.

Petroleum.—An emulsion of petroleum with soapwort decoction has been proposed by Jordery to lessen its inflammability, while being transported or stored. A concentrated decoction of soapwort will, by constant stirring, readily emulsify twenty-five times its volume of petroleum, and this mixture gradually becomes firmer in consistence. In this condition petroleum does not readily penetrate into the fissures of the barrels, and its volatility is considerably lessened. The addition of a few drops of carbolic acid, or of a somewhat larger quantity of crystallizable acetic acid, renders the mass liquid again in a few minutes, and the petroleum rises clear and limpid to the surface of the aqueous solution.

In a report to the Conseil de salubrité de la Seine, Mr. Troost speaks favorably of this invention, and states that it deserves the attention of all interested in the sale of petroleum, notwithstanding the process in its present state does not yet appear to be adapted for introduction into practice. Amer.

Jour. Pharm., from Journ. de Pharm. et de Chim., May, 1873, pp. 348, 349.

Azophenylen.—This substance, obtained by the dry distillation of the azobenzoate of calcium, is described by Prof. S. Claus, who finds its formula to be $C_{12}H_8N_2$ ($O = 16$). It forms long, light-yellow, shining needles; melts at 170° C. (= 338° F.) and sublimes unchanged; is soluble in 50 parts cold alcohol and very readily in hot; sparingly soluble in cold water; may be crystallized from hot water; is volatilized with the vapor of boiling water, giving a pleasant aromatic odor reminding of the oil of cinnamon. It is not changed by hydrochloric acid; is converted into a nitro-product by nitric acid, and into a sulpho-acid by prolonged heating with concentrated sulphuric acid. The author has also obtained and describes bromazophenylen, $C_{12}H_8N_2Br_2$ ($O = 16$), and hydrazophenylen, $C_{12}H_{10}N_2$ ($O = 16$), and the combinations of the latter with sulphuric and hydrochloric acids, and with platinum. Chem. News, Aug. 15th, 1874; Ann. Chem. Pharm., vol. xcii (new series), No. 1.

Phenylallyl.—C. Chojnacki has obtained phenylallyl synthetically by heating to 100° C. (= 212° F.) under pressure a mixture of equal parts of benzole, and of iodide or bromide of allyl with one-fifth of zinc powder. Compt. Rend., June 9th, 1873; Chem. N., July 4th, 1873.

Toluen and Nitrotoluen.—The circumstance that by the reduction of nitrotoluen two isomeric alkaloids, toluidin and pseudotoluidin, always result, has induced Mr. Rosenstiehl to experiment, and he found that nitrotoluen is always a mixture of two isomeric modifications, while only one toluen exists, no matter from what source obtained. The two nitrotoluens are formed simultaneously by the treatment of toluen with nitric acid, and the author designates them by α toluen and β toluen.

α *Toluen* is crystallizable; melts at 52° C. (125.6° F.); boils at 237° C. (= 458.6° F.); yields by reduction toluidin, and by oxidation with chromic acid nitrodracylic acid.

β *Toluen* is liquid, and yields by reduction pseudotoluidin, Arch. Pharm., July, 1873, p. 71, from Annal. de Chim. et de Phys.

Anthraceen ($C_{14}H_{10}$).—The importance which this hydrocarbon has acquired for the preparation of artificial alizarin has, as a consequence, induced experimenters to obtain it more economically. The usual methods of its isolation consisted in extracting the residual pitch from the distillation of coal-tar; Messrs. Fenner and Versmann have, however, discovered that if the heating is continued so as to destroy the pitch completely a much larger quantity is obtainable. The distillate is composed of anthraceen and an oil, which is removed by expression. The residual solid substance contains from 30 to 60 per cent. of anthraceen, and in this condition enters commerce, its value being determined by the percentage of anthraceen it contains. Arch. Pharm., 1873, p. 468, from Polyt. Jour.

Phenanthren, a new hydrocarbon, isomeric with anthraceen, was discovered by Gräbe in 1872, and about the same time by Fittig, who, however, failed to recognize it. Gräbe obtained it from crude anthraceen; found it to be crystallizable; to melt at 105° C. (=221° F.), and to boil at 340° C. It is freely soluble in benzol, bisulphide of carbon, ether, and hot alcohol; sparingly soluble in cold alcohol. By the action of chromic acid it is oxidized, and like its isomere, anthraceen, forms chinon, although the oxidation takes place with greater difficulty. The chinon obtained from phenanthren differs, however, in some of its reactions from that obtained from anthraceen (anthrachinon); and a still greater difference is observed in the relation of phenanthren to concentrated sulphuric acid, with which at a temperature of 100° C. (=212° F.) it forms a sulpho-acid, while anthraceen is charred by concentrated sulphuric acid. Finally, Gräbe (in 1873) has succeeded in preparing it artificially by passing the hydrocarbon *stilbene* through a red-hot tube, by which it is resolved into phenanthren and toluol. Arch. Pharm, July, 1873, pp. 67–71.

Fluoren, a new and highly fluorescent hydrocarbon, has been obtained by Barbier from the parts of coal tar which are volatile between 300° and 340° C. (=572° and 644° F.); its formula being $C_{26}H_{10}$. On treatment with bromine it forms a bibromic derivative, $C_{26}H_8Br_2$, which crystallizes in splendid clinorhombic tables, and fuses at 166° to 167° C. (= 330.8° to 332.6° F.). Chem. News, Sept. 5th, 1873; Compt. Rend., Aug. 11th, 1873.

Crotonylen.—The experiments of Mr. L. Prunier indicate that ethylacetylen, formed synthetically by Berthelot by causing acetylen to act directly upon ethylen at a dull red heat, is identical with crotonylen. A mixture of ethylen and acetylen was, by Pruner, passed into bottles containing bromine, and was left in contact for two days. Upon evaporating the mixture and crystallizing a compound was obtained, which was found to agree in appearance, in properties, and especially in its fusing-point, with the tetrabromide of crotonylen of Caventou. Compt. Rend., June 9th, 1873; Chem. News, July 4th, 1873.

VOLATILE OILS AND STEAROPTENS.

Volatile Oils.—According to G. Leuchs, volatile oils that are distilled with water, always contain water even when perfectly clear. Upon the addition of several times their volume of petroleum ether to such oils, turbidity is produced by the separation of the water. Arch. Pharm., June, 1873, p. 565, from Journ. Prakt. Ch.

Oil of Turpentine is, it is stated, very readily purified by treating it with a moist mixture of fish-glue (isinglass), and common salt. Zeitschr. Œst. Apoth. Ver., 1873, No. 29, p. 526.

Tereben.—The body commonly known as tereben is by J. Ribau shown to be a mixture of cymen and true tereben, the latter of which he has succeeded in isolating. It is a colorless, mobile liquid, of a faint, peculiar odor; does not congeal at 27° C. (= —16.6° F.); boils at 155° to 156° C. (= 311° to 312.8° F.), and is composed of $C_{10}H_{16}$ (O = 16). It is not as readily oxidized as is its isomere terebenthen. Compt. Rend., June 23d, 1873; Chem. News, July 28th, 1873.

Hydrochlorate of Tereben has been the subject of experiment by M. J. Ribau, who gives the following description of its characters. It is without action upon polarized light; forms crystals of a camphorlike odor, and recalls in certain respects the hydrochlorates of terebenthen and camphen. It melts at 125° C. (= 257° F.), and is quickly decomposed by water, which removes the bulk of the hydrochloric acid, converting the substance into a mixture of a crystalline hydrocarbon, $C_{10}H_{16}$ (O = 16), which the author calls β camphor, and undecomposed hydrochlorate. It is soluble in hot absolute alcohol; and if the temperature of 55° to 60° C. (= 131° to 140° F.) is not exceeded, the bulk of the product is deposited in fine transparent laminæ, not containing more than 17 to 18 per cent. of chlorine. The hydrochlorate of tereben is dissociated at ordinary temperatures; it is decomposed most rapidly by the action of cold water, and under the same influence at 100° C. (= 212° F.) furnishes only liquid compounds, contrary to what has been observed with the liquid combinations of camphens and borneols. Chem. News, Sept. 12th, 1873; Compt. Rend., Aug. 18th, 1873.

Hydrochlorate of Terebenthen is undecomposable by cold water, and yields only traces of hydrochloric acid at 100° C. (= 212° F.). The

Hydrochlorates of Camphen are slowly decomposed by cold water, and by the same liquid at the boiling-point; the primitive crystalline camphen being regenerated. The

Hydrochlorates of the Two Borneoles experience an analogous decomposition under the same circumstances, but with less intensity. Ibid.

Oil of Calamus.—The oil obtained from the root of Acarus calamus was subjected to fractional distillation by A. Kurbatow, who obtained distillates between 140° and 280° C. (= 284° and 536° F.). By fractioning the oil passing to 170° C. (= 338° F.), the author obtained a portion which boiled between 158° and 159° C. (= 316.4° and 318.2° F.). This was composed of $C_{10}H_{16}$ (O = 16), colorless, of terebinthinate odor, soluble in alcohol and ether, and of a sp. gr. at 0° C. (= 32° F.) of 0.8793. Treated with dry HCl, a crystalline mass, melting at 65° C. (= 149° F.) is formed. The portion distilling between 240° and 270° C. (= 464° and 518° F.) yielded by careful fractioning at 250°–255° C. (= 482°–491° F.) a bluish-colored oil, which by boiling with metallic sodium was discolored and yielded a hydrocarbon, boiling between 255° and 258° C. (= 491° and 496.4° F.). It is also composed of $C_{10}H_{16}$ (O = 16), is with difficulty soluble in alcohol, readily in ether, and forms with dry HCl a compound. Ph. Centralhalle, No. 10, 1874, p. 123; Ber. d. d. Chem. Ges.

Oil of Lemon.—Dr. H. T. Bond states that when oil of lemon is received, it should be shaken with water in the proportion of two ounces to each pound, by which the mucilaginous matter is removed, and sinks to the bottom in the water. Oil so treated will keep unchanged for years. The Pharm., Nov. 1873, p. 332.

Oil of Orange.—According to the experiments of C. R. A. Wright the greater part of oil of orange, amounting to 97.2 per cent., distils over below 180° C. (= 356° F.), and the portion so distilled, on distillation over sodium, yields a hydrocarbon, $C_{10}H_{16}$, which boils constantly at 178° C. (= 352.4° F.), is apparently a homogeneous substance, no trace of cymen being present, and is called by the author *hesperiden.* When two equivalents of bromine are cautiously added to this terpen of orange oil, combination takes place with evolution of heat, and the product breaks up with formation of hydrobromic acid and cymen, which is identical with the cymen in cumin oil and with that obtainable from camphor.

Besides hesperiden, the oil of orange contains a small quantity of an oxidized constituent boiling near 220° C. (= 428° F.), possessing the composition of $C_{10}H_{16}O$; also a non-volatile soft resin giving numbers on analysis agreeing with the empirical formula $C_{20}H_{30}O_3$, together with another oxidized substance of high boiling-point, a portion distilling between

240° and 250° C. (= 464° and 482° F.), agreeing with the empirical formula, $C_{40}H_{64}O_5$.

The oxidized constituent $C_{10}H_{16}O$ is possessed of the property of becoming altered by heat, forming an isomeric liquid of higher boiling-point, and finally becoming a non-volatile resin, no change in its composition being thereby produced. In this respect it resembles an analogous (or identical) substance from oil of nutmeg.

Oil of Nutmeg contains, according to the experiments of the same author, about 2 per cent. of soft non-volatile resin, agreeing with the empirical formula, $C_{40}H_{56}O_5$; substances distilling between 260° and 280° C. (= 500° and 536° F.), and between 280° and 290° C. (= 536° and 554° F.); an oxidized constituent (the *myristicol* of Gladstone), boiling near 212° C. (= 413.6° F.), altering by the action of heat in the same way as the constituent $C_{10}H_{16}O$ contained in oil of orange, and having the same formula. Gladstone had attributed to myristicol the formula $C_{10}H_{14}O$, with which the author's results do not agree.

Myristicol is, by the action of chloride of zinc, partly split into water and cymen, and a portion is converted into a non-volatile resin, intermediate in composition between cymen and myristicol. When treated with pentachloride of phosphorus the myristicol gives rise to a chlorinated product, which, when heated, splits up into hydrochloric acid and cymen, which is identical with the cymen obtained from other known sources.

Besides these, oil of nutmegs contains a mixture of at least two hydrocarbons, one of which is a *terpen* boiling at 163° C. (= 325.4° F.), the other ordinary *cymen*. A portion of it will always remain with the terpen of oil of nutmegs; hence the products of oxidation of the terpen are always contaminated with those of cymen. The cymen may be obtained pure by treating the mixed hydrocarbons with sulphuric acid, whereby the terpen is resinified, and distilling with water, when cymen will pass unaltered and identical with that obtainable from other sources. The terpen yields, like that of oil of orange, cymen, by the action of bromine.

Oil of Turpentine was also found to contain cymen, the author having obtained it by the same process, *i. e.*, resinification with sulphuric acid, and distillation with water. Ph. Jour. Trans., Oct. 18th, 1873, pp. 311–312.

Myristicin.—It has been asserted that the stearopten, which separates in small quantities from volatile oil of nutmeg (from *Myristica fragrans*, Houtt., as well as from *M. fatua*, Houtt.), is soluble in water. Prof. F. S. Flückiger has obtained handsome crystalline scales of this stearopten by crystallization from alcohol, which, notwithstanding repeated crystallizations from alcohol, retain their peculiar nutmeg odor. These melted at 54° C. (= 129.2° F.), but were, as expected, *completely insoluble in water.* The substance was dissolved by glacial acetic acid, with at first red coloration. N. Rep. Ph., 1874, No. 2, p. 117.

Oil of Wintergreen has, by Dr. Wilson H. Pile, been found in the market adulterated with chloroform. Mr. Charles Bullock had also observed oil of wintergreen so adulterated, which contained besides a large percentage of oil of sassafras, the method pursued being, probably, to add to four or five pounds oil of sassafras, one pound oil of wintergreen, and sufficient chloroform to raise the specific gravity to the required point. Am. Jour. Pharm., Nov., 1873, p. 521.

Prof. Maisch, in reference to the above, states that when oil of wintergreen so adulterated is treated in the cold with commercial nitric acid a deep red resinous product (from the oil of sassafras) separates, while the pure oil of wintergreen is not colored by it. Ibid.

Oil of Spiræa Ulmaria.—The volatile oil of the root of Spiræa ulmaria is not salicylous acid, as stated by Wicke a number of years ago; Dr. R. Metzke found it to be a compound ether of salicylic acid, which is heavier than water, has the odor of gaultheria oil, and is probably identical with it. Twenty pounds of the fresh root yielded, on distillation with cohobation, little more than one grain of the oil, which is contained in the rhizome as well as in the rootlets. The flowers, it will be remembered, contain salicylous with salicylic acid.

Am. Jour. Ph., from Archiv d. Pharm., May, 1874, pp. 429–433.

Caryophyllin.—The acid oxidation product, obtained from caryophyllin by the action of nitric acid, has been the subject of experiment by E. Mylius, who proposes to name it

Caryophyllinic Acid.—The author prepared it from caryophyllin, the purity of which had been determined by analysis, as follows: The caryophyllin is gradually added in small quantities to fuming nitric acid, cooled by means of cold water, when it will dissolve with strong evolution of heat and gas. After the liquid has acquired a certain degree of concentration, crystals are formed, and upon cooling a white magma is formed, which under the microscope is found to be composed of brush-shaped tufts of crystalline needles. The crystalline mass is drained upon a funnel, and then washed with ordinary nitric acid, and, finally, with water, to remove the fuming acid. The crystals are now dissolved in ammonia-water, precipitated from the filtered solution by muriatic acid, and, after washing with water, the precipitate is dissolved twice successively in alcohol and precipitated with water. So obtained it is pure, white, amorphous; at first tasteless, but subsequently bitter; feebly acid, but in moist condition reddening blue litmus. It can be obtained in crystalline condition only from its solution in fuming nitric acid; dissolves readily and rapidly in ammonia-water and carbonated alkalies, forming yellowish liquids which froth almost like soap solutions. Its composition as given by the author is $C_{20}H_{30}O_6$ ($O = 16$), this corresponding to the analysis; but he regards it probable that it should be $C_{20}H_{32}O_6$ ($O = 16$). He has also prepared, and describes the following compounds:

Caryophyllinate of Sodium, obtained by dissolving the acid in excess of carbonate of sodium, evaporating to dryness upon a water-bath, exhausting the residue with alcohol, and evaporating the filtered solution to dryness. The salt so obtained is amorphous, yellow, bitter, readily pulverizable, in which condition it permanently remains, and is readily soluble in water and in alcohol. Composition $= C_{20}H_{30}Na_2O_6$ ($O = 16$).

Caryophyllinate of Barium, obtained by double decomposition between the sodium salt and chloride of barium. It is amorphous, yellow, bitter, sparingly soluble in water, and precipitable from such solution by alcohol. Composition $= C_{20}H_{30}BaO_6 + 1\frac{1}{2}H_2O$ $(O = 16)$.

Caryophyllinate of Silver is obtained by double decomposition between the sodium salt and nitrate of silver. It forms a yellow, flaky precipitate, which upon drying turns brown, and is sparingly soluble in water and in alcohol. Composition $= C_{20}H_{30}Ag_2O_6$ $(O = 16)$. Arch. Ph., November, 1873, pp. 392–397.

Oil of Peppermint.—On the examination of oil of peppermint a valuable paper has been published by Prof. Flückiger in "Pharm. Handelsblatt," April 1st. The author calls attention to the fact, that the optical behavior is no reliable criterion for the purity of volatile oils, the rotatory power of their proximate constituents being influenced and often reversed by various agents. Even the color reactions are more or less dependent upon the relative proportion of these compounds; but some are so characteristic that they deserve attention. Thus oil of peppermint is colored beautifully green or blue by a very small quantity of nitric acid, and it acquires at the same time a fluorescence, appearing copper red by reflected light.

The influence of chloral upon oil of peppermint has been noticed by Jehn*. The author found that his samples of the oil were colored but slightly brown or yellow by chloral hydrate even after the application of heat, but anhydrous chloral alters the oil gradually at ordinary temperature. Of two samples which showed exactly the same behavior to nitric acid, one acquired with one-fifth volume of anhydrous chloral gradually a brown color, while the other turned green, the color always being purer and richer after a contact of some hours or days in the cold.

Concentrated sulphuric acid or bromine also show peculiar colorations: the reaction should be moderated by the addition of carbon bisulphide. Very remarkable differences are observed on agitating different samples of the oil with a saturated solution of bisulphite of sodium; one was colored green, then blue, the other rose-red, violet, etc. The author suggests to those having authentic samples of oil of peppermint to endeavor to ascertain the cause of this different behavior. Am. J. Pharm., June, 1874, p. 373.

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* See page 232 of this volume.

Oil of Dillseed.—In view of the meagre literature upon the chemical constitution of oil of dill, R. Nietzki has instituted a comprehensive series of experiments in order to determine its chemical character. Gladstone had, by his experiments, and he seems to be the only authority on the subject, arrived at the conclusion that the oil contained a right deflecting hydrocarbon belonging to the tereben series. Although it seemed probable that the oil might contain a tereben, the author inclined to the opinion that the tereben of Gladstone was an oxygenated oil, and the experiments subsequently made completely justified the opinion.

The freshly distilled oil of the fruit of Anethum graveolens is colorless, but after a time it becomes yellowish. Traces of an acid, having all the reactions of butyric acid, pass over during the distillation of the oil. The oil, when subjected to fractional distillation, yielded three distinct substances, two of them hydrocarbons, the third an oxygenated oil. The latter was determined to be identical with *carvol*, and amounted to 30 per cent. The two hydrocarbons are terebens of composition $C_{10}H_{16}$ ($O = 16$). One, amounting to 10 per cent., boils between 155° to 160° C. (= 311° to 320° F.); the other, amounting to 60 per cent., at 170° to 175° C. (= 338° to 347° F.). Both of them were capable of being converted into cymol by the method of Oppenheim for so converting tereben. Arch. Ph., April, 1874, p. 317.

Thymol.—Dr. Peschechonow has made comprehensive experiments with thymol, with a view to determining its influence upon animal ferments, and in the endeavor to find a pleasant substitute for phenol, so objectionable on account of its persistent odor. His experiments include only the action upon the saliva and the gastric juice, upon both of which it acts precisely like carbolic acid. The action of saliva upon starch is retarded by thymol, the retarding effect being increased by an increased quantity of the thymol. The same effects are produced upon pepsin, but the action of the thymol is more energetic. Ph. Zeitschr. Rus., 1873, No. 20, pp. 609–616.

Oil of Chamomile, which, according to Gerhard, would be a mixture of a small quantity of resinous matter, of hydride of angelyl, and a hydrocarbon, camomilen, isomeric with oil of turpentine, and boiling at 175° C. (= 347° F.), has, according to the experiments of E. Demarçay, an entirely different constitution. It is a mixture of several ethers, among which the angelates and valerianates of butyl and amyl predominate. To control this hypothesis the author prepared the angelates of butyl and amyl, and also analyzed portions of the essential oil. The angelate of butyl boils at 177° to 179° C. (= 350.6° to 354.2° F.), and its odor recalls that of the oil, but is not identical. The angelate of amyl boils at 198° to 200° C. (= 388.4° to 392° F.); its odor much resembling that of the preceding compound. The analysis proved the hydrocarbon camomilen to correspond to the formula for valerianate of butyl. Ph. Jour. Trans., Sept. 6th, 1873, p. 185, from Compt. Rend., 1873.

Eucalyptol.—The volatile oil of eucalyptus which, according to Cloëz, is not a simple, but a complex, oil, from which, by fractional distillation, several oils, distinct in their composition, are obtained, yields between 170° to 175° C. (= 338° to 347° F.), a component for which Cloëz proposes the name eucalyptol, and which he found to consist of $C_{12}H_{20}O$. This has been the subject of experiment by Dr. Binz, who finds it to be strongly antizymotic. Cubical pieces of meat and albumen were preserved better in an emulsion of eucalyptol (1 to 750, with a little gum) than in a solution of kinate of quinia of the same strength. The same was true of blood, and the fermentive action of yeast upon glucose was retarded more by the emulsion of eucalyptol than by the quinia solution. The conversion of tannin into gallic acid, and the formation of mould* upon solutions of tartaric acid were also signally retarded. N. Rep. Pharm., 1873, No. 6, pp. 342–346.

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* See also Proceedings Am. Pharm. Assoc., 1873, p. 98.

A. Faust and I. Homeyer have repeated the experiments of Cloëz, published several years ago, but were unable, by fractional distillation, to obtain eucalyptol having a constant boiling-point of 175° C. (= 347° F.). They found that when the product passing between 171 and 174 was distilled over metallic sodium, a product of constant boiling-point could be obtained, but owing to the rapid absorption of oxygen the boiling-point was soon raised again. The authors, furthermore, found that metallic sodium remained perfectly bright in eucalyptol contained in a well-stoppered vial. They therefore doubted that it should contain oxygen, and their experiments conclusively prove its absence. Further experiments proved it to be a mixture of terpen and cymol, the latter being contained in the proportion of not more than 30 per cent. The eucalyptol of the authors has the odor of a fine terpen, is soluble in all proportions in absolute alcohol, ether, and chloroform, require about 15 parts of alcohol of 90° for solution, and absorbs oxygen with great avidity, becoming thereby resinified. Ph. Centralhalle, No. 9, 1874, pp. 65–67; Polyt. Notizbl.

Oil of Nasturtium Officinale.—The volatile oil of Nasturtium officinale is, according to A. W. Hofmann, a mixture which commences to boil at 120° C. The main portion is obtained at 261° C. (440° F.), and has, at 18° C., the specific gravity of 1.0014; it is the nitrile of phenylpropionic acid, and has the composition C_9H_9N. Am. J. Ph., from Ber. d. d. Chem. Ges., p. 520.

Oil of Tropæolum Majus.—A. W. Hofmann found that the portion of this volatile oil commencing to boil at 160° C., had a disagreeable odor, and contained sulphur. The largest portion, distilling at 226° C. (377° F.), has the formula C_8H_7N, and is the nitrile of phenylacetic acid. Am. J. Ph., from Ber. d. d. Chem. Ges., 1874, p. 518.

Essential Oil of Mustard.—E. Luck describes a method for the detection of bisulphide of carbon in the volatile oil of mustard, which is based upon the difference in the boiling-points of the two liquids, 48° : 151° C. (= 118.4° : 303.8° F.), the reaction of alcoholic solution of potassa upon the bisulphide of carbon, and the subsequent reaction of the xanthogenate of potassium formed, upon sulphate of copper. About one-half to one cubic centimetre of the suspected oil is placed into a small test-tube, which, by means of a small siphon-shaped glass tube, is united with a second test-tube, the long end of the siphon-tube extending to near the bottom of the second test-tube (receiver), in which a few drops of water are contained, and which is kept cool by wrapping with moist linen cloth. A very minute opening is made in the cork, closing the receiver, to permit the escape of air. The tube containing the oil is then heated in a water-bath, when, if only 4 to 6 per cent. of bisulphide of carbon is present, heavy drops will accumulate beneath the water in the receiver, which is then disconnected, the water above the bisulphide of carbon carefully removed by means of filtering-paper, and one-half to one cubic centimetre of a solution of potassa in absolute alcohol added. After a short time the liquid is acidified with acetic acid, and a few drops of solution of sulphate of copper is added, when, if bisulphide of carbon has been present, a handsome lemon-yellow precipitate of xanthogenate of copper is produced, which does not change its color. If no drops form beneath the water, the siphon-tube is rinsed out with a little alcohol, and if only traces of bisulphide of carbon are in it, by treatment as above, a distinct reaction results. Ph. Centralhalle, 1873, No. 30, p. 257.

Volatile Oil of Mustard has been found, by Dr. Hager, adulterated with artificial oil of wintergreen—methylsalicylic acid—which is not detected by the sulphuric acid or specific gravity tests. It may be detected, however, by adding to a mixture of five drops of the suspected oil and five to eight cubic centimetres of alcohol a few drops of solution of perchloride of iron, when a dark-violet color results if the oil is adulterated with oil of wintergreen. The pure oil remains, under the same conditions, unchanged. Ph. Centralhalle, 1874, No. 5, p. 34.

Oil of Cochlearia Officinalis.—The volatile oil of Cochlearia officinalis was found, by A. W. Hofmann, to be mustard oil of the butylic series, having the composition $C_5H_9NC = C_4H_9, CS,N$. It was obtained synthetically, not from the normal but from the secondary butylic alcohol (methylethyl-carbinol), and had then the characteristic odor of the plant, a specific gravity of .944 at 12°, and a boiling-point of 159.5° C. (= 319° F.). Am. J. Pharm., from Ber. d. d. Chem. Ges., pp. 508–514.

ALCOHOLS, ALDEHYDES, AND ETHERS.

Methylic Alcohol.—M. M. C. Friedel and R. D. Silva, who had previously announced that the dry distillation of a new valerianic acid, mixed with an excess of formiate of calcium, yielded methylic alcohol, now find that the same alcohol is produced by distilling pure formiate of calcium. Formic aldehyde was probably also produced, the characteristic odor of dioxymethylen being distinguishable. Chem. News, July 18th, 1873, from Compt. Rend., June 23d, 1873.

Alcohol.—When starch-paper is dipped into a solution of iodine in absolute alcohol, the well-known iodide of amylum reaction does not appear, according to experiments made by A. Vogel. The paper assumes, according to the strength of the iodine solution, a yellow or brown color, and if kept dry and from the influence of light, will keep unchanged for months. In a moist atmosphere it gradually assumes a blue color, which appears immediately when moistened with water. By writing upon such paper it affords a nice lecture experiment. Alcohol of less strength will still prevent the color reaction, until a sp. gr. of 0.880 is reached (66.83 per cent. by weight), at which strength the blue color still fails to appear, but the most minute dilution with water causes the tincture to produce the characteristic reaction. The author further states that this property of alcohol, above a certain strength, to prevent the characteristic reaction of iodine with starch-paper, might be employed for determining the strength of alcoholic liquids containing solid constituents; and, that while he does not recommend it, it might also be employed to ascertain the strength of alcohol.

Another reaction, differing with alcohol of different strength, is that of metallic potassium, which, when brought in contact with absolute alcohol, or any alcohol of intermediate strength down to sp. gr. 0.823, is not ignited, if the alcohol is at the ordinary temperature, although the oxidation of potassium results with the usual rotatory motion. When brought in contact with alcohol of 0.830 and weaker, however, combustion immediately takes place, and this of course is true of weaker alcohols. N. Rep. Ph., 1873, No. 6, pp. 349–353.

Alcohol from Sawdust.—C. G. Zetterland has made experiments upon the production of alcohol from sawdust. For this purpose 9.0 cwt. of sawdust from pine and fir wood (very moist) was boiled with 0.7 cwt. of muriatic acid of sp. gr. 1.18, and 30.7 cwt. of water under a steam pressure of 0.116 kilogramme per cubic centimetre. After eight hours the mass contained 3.33 per cent. of glucose, and after eleven hours it contained the maximum quantity obtainable = 4.38 per cent. The acid was then neutralized with lime until it contained, by Lüderdorff's acidometer, but ½° of acid. It was then, at a temperature of 30° C. (= 86° F.) with a ferment prepared from 20 pounds of ground malt, allowed to ferment ninety-six hours. The fermented liquor so obtained yielded 61 quarts of spirit of 50 per cent. at 15° C. (= 59° F.), which was perfectly free from terebinthinate odor and taste. The author thinks that it is more than probable that the industrial production of alcohol from sawdust can be profitably carried on when it is accurately determined how far the acid must be diluted, and how long the boiling continued. If it were possible to convert all the cellulose into glucose, 1 cwt. of air-dry sawdust would yield at least 27.4 quarts of spirit of 50 per cent., at 15° C. (= 59° F.). Arch. Ph., Dec., 1873, p. 562; Zeitschr. f. d. Spiritus fabr.

Absolute Alcohol.—The rectification or concentration of alcohol from lime has been the subject of experiment by Mr. Chas. Bullock. 15 gallons of alcohol of sp. gr. .82361 at 60° F. = 93 per cent., was poured on 70 pounds of well-burned lime, in small pieces, in a still; it was heated to 120° F. and allowed to stand for three days, and subjected to distillation, and 10 gallons collected, each gallon separately. After ascertaining the specific gravity of each of these 10 gallons, they were returned to the still with 25 pounds of quicklime, and operating as above, 8 gallons of distillate collected. The following is the result of his experiment:

	First distillation.	Second distillation.
1st gallon,	.80170	.80978
2d "	.79756	.79700
3d "	.79610	.79461
4th "	.79762	.79516
5th "	.80040	.79458
6th "	.79593	.79410
7th "	.79782	.79425
8th "	.79632	.79615
9th "	.79706	
10th "	.79780	
Mean,	.79783	79695

The density of absolute alcohol is stated differently by different authorities; Drinkwater and Fowne = .79381; Tralles, .7939; Gay-Lussac, .7947; the mean being .79413. It will be observed that the sixth gallon of the second distillation alone is absolute, according to the mean standard. A. J. Ph., April, 1874, pp. 184–186.

Mashing.—Experience has taught that when, during the mashing of grain, the mash is treated with aqueous sulphurous acid, the yield of spirit is considerably larger than under ordinary conditions. The spirit produced possesses, however, a peculiar unpleasant odor, and can therefore only be used for industrial purposes. It has now been discovered that when the mash is treated with bisulphite of sodium, the spirit produced is perfectly free from the peculiar unpleasant odor referred to. Ph. Centralhalle, 1874, No. 5, p. 38; Polyt. Notizbl.

Beer.—A new method for the detection of the bitter principles most commonly used to impart bitterness to beer in place of the hop bitter, is proposed by R. Haffstedt. The bitter principles that are proposed to be detected are picrotoxin, absinthin, menyanthin, quassiin, and colocynthin, and the method is based upon their relation to subacetate of lead, tannic acid, and their solubilities in water, alcohol, and ether.

I. Precipitable by solution of subacetate of lead:

Lupulin.—Not precipitable by tannic acid; soluble in ether and alcohol; insoluble in water.

II. Not precipitable by solution of subacetate of lead:

Picrotoxin.—Not precipitable by tannic acid; soluble in alcohol, ether, and water.

Absinthin.—Not precipitable by tannic acid; soluble in alcohol and in ether; insoluble in water.

Menyanthin.—Precipitated by tannic acid; colored violet by concentrated sulphuric acid.

Quassiin.—Precipitable by tannic acid; not colored by concentrated sulphuric acid.

Colocynthin.—Precipitable by tannic acid; becomes red, then brown, by concentrated sulphuric acid.

Arch. Pharm., 1873, p. 471, from N. Jahr. Pharm.

Beer, colored artificially with caramel is, according to Dr. R. Schuster, not decolorized when agitated with tannin. Beer not so colored is under the same circumstances completely decolorized. The Pharm., Aug., 1873, p. 248, from N. Jahr. Ph.

Clarification of Beer.—E. Bescius recommends the following method as rapid and satisfactory. Four ounces of tannin is dissolved in 1½ lbs. of rain-water, and mixed with 1000 litres of beer. After three or four days a litre of solution of isinglass or gelatin (containing 10 grammes of the former or 20 grammes of the latter) is added, and the beer is allowed to rest. In eight days clarification is usually complete. Ph. Centralhalle, 1873, No. 27, p. 332.

Italian Wines.—Prof. Giovanni del Sie has contributed a chemical analysis of various wines from the district of Verona, which is a laborious contribution to agricultural chemistry, showing in a tabular form the age of 100 samples of wine, the names of the growers, their locality, the quality of the soil, the kind of grape, their physical characters, the percentage of alcohol, both by weight and volume, the proportion of residue on evaporating at 120° C. (= 248° F.), the ash, the water, and the recorded character of the fermentation. Chem. News, Aug. 22d, 1873, from Gazzetta Chimica Italiana, July 30th, 1873.

Wine is, according to Hoff, very readily clarified by the use of from one-half to one per cent. of finely elutriated kaolin, and he prefers this clarifying medium to all others now in use. It is odorless and tasteless, is insoluble in dilute acids, and does not change the wine. Its specific gravity is such that it takes up but small space in the barrels, settles rapidly, and carries with it suspended impurities, forming a cohering precipitate from which the wine may be drawn to the last drop. It is used by mixing about one-half per cent. with a portion of the wine to make a thin paste, which is then added to the main portion. If this is not enough, an additional one-half per cent. is added in the same way. If the wine clarifies slowly, it is advantageous to stir up the kaolin a few times. Zeitschr. Œst. Apoth. Ver., No. 6, 1874, pp. 102–104.

Artificial Wines.—According to Méné, various syrups are prepared, which are saccharine liquids, analogous to the juice of grapes, containing tannin, salts, coloring matters, etc., and which seem to be used by mixing them with the residue of the grapes after the first pressure, and pressing again so as to yield a further quantity of liquid which may be transformed, and pass for wine. The author thinks that this system is less dangerous, and that gross falsifications may be prevented. Chem. News, Nov. 21st, 1873, from Rev. Hebdom. de Chim. Scientif. et Indust., 1873.

Raisin Wine, which is said to be equal to the Spanish wines, is prepared by L. Leibach as follows: 10 kilogrammes of selected and seeded raisins are washed; 150 litres of good ordinary wine is added, and the mixture is introduced into a barrel. A solution of 4 kilogrammes of the purest powdered sugar in 4 to 5 litres of water, is made by boiling, and when cool is added to the contents of the barrel, followed by a solution of 9 grammes bicarbonate of potassium and a solution of 6 grammes of tartaric acid. The mixture is then well shaken, and is allowed to rest for four weeks in a moderately warm situation; 2 kilogrammes more of sugar is then added, and after a further lapse of six weeks, a like quantity is added. After the fermentation has ceased—which requires from eight to ten weeks—the wine is fined by means of gelatin, isinglass, or albumen, and is racked off. Ph. Centralhalle, 1873, No. 27, p. 331.

Chloride of Mercurethyl.—The history of this compound, which has been introduced into commerce by Schering & Co., under the name of Hydrargyrum æthylochloratum, and is recommended in European medicine as a substitute for corrosive sublimate, possessing, it is claimed, in the same doses all the medicinal effects of the latter, with the advantage of not precipitating albumen, is reviewed by Prof. J. M. Maisch in A. J. Ph., Aug., 1873, p. 336. It was discovered in 1854 by Strecker and by Dünhaupt. The process of Strecker seems to answer the best purpose, and consists in digesting mercury with iodide of ethyl, by which iodide of mercurethyl is formed; converting this into the nitrate by the addition of nitrate of silver, and the nitrate into the chloride by the addition of muriatic acid or chloride of sodium. The process is, however, exceedingly tedious and complicated.

Chloride of mercurethyl has the composition of C_4H_5HgCl; forms white, thin, silvery scales with an almost pearly lustre, and has a peculiar ethereal unpleasant odor. It is sparingly soluble in cold water, little in ether and cold alcohol, but freely in boiling alcohol; sublimes at 40° C. ($=122°$ F.) without previously fusing, and condenses in thin laminæ. On account of its ready volatility and extremely poisonous character it must be handled with great care. It is by Schering regarded as pure if it is rapidly and completely volatilized; is soluble without residue in boiling alcohol; yields in alcoholic solution but a faint reaction of chlorine, and, with alkali, does not produce a precipitate.

Polyaceton is, according to W. Heintz, identical in composition with aceton, but its higher boiling-point proves that its molecule is larger than that of aceton. The author considers it to be the analogue of the *duplo-sulphaceton* of Wislicenius. Chem. News, Dec. 5th, 1873, from Ann. Chem. Ph., Oct. 4th, 1873.

Manufacture of Chloral Hydrate.—The chlorine for the purpose is most readily prepared from muriatic acid with peroxide of manganese. The alcohol should be at least of 96 per cent. The chlorine being passed into the alcohol requires from twelve to fourteen days, and should be continued until the alcohol (acted on) becomes heated to 60–70° C. (= 140–158° F.), and has a density of 41° B. The purification of the crude product is conducted in copper retorts, lined with lead, and capable of containing from 300 to 400 pounds, in which it is mixed with an equal weight of sulphuric acid, and carefully heated to the boiling-point over a charcoal fire. A large quantity of muriatic acid is liberated and escapes through a reversed condenser in which the chloral vapors are condensed, and returns to the retort; this treatment being continued as long as muriatic acid escapes. It is notable that during this operation any chloral alcoholate is completely decomposed. The chloral hydrate so obtained requires several rectifications. Prof. Kraemer has determined that the ethereal liquid, which accumulates beneath the muriatic acid, is a mixture of the chlorides of æthylen and æthyliden. Zeitschr Œst. Apoth. Ver., 1874, No. 5, p. 83; Arch. de Phar., 1874, vol. i, p. 28.

Chloral Hydrate.—The methods for the quantitative determination of chloral, which depend upon the well known decomposition of the chloral by alkalies into chloroform and formic acid, generally agree in basing the calculation upon the quantity of chloroform liberated. Victor Meyer and H. Heffter suggest that, instead of determining the amount of chloroform, the amount of formic acid be determined, and state that they have obtained exceedingly accurate results. The chloral hydrate is decomposed with an excess of normal solution of soda, and the excess of soda is determined by the use of normal solution of an acid. If the chloral contains free acid it must be rendered neutral by agitating its solution with carbonate of calcium. Ber. d. d. Ch. Ges., 1873, p. 600; Arch. Ph., July, 1873, pp. 65–66.

Referring to the above E. M. suggests the following practical method of conducting the process in the pharmaceutical laboratory: One-twentieth mol. chloral hydrate, in grammes = 8.28 grammes, is dissolved in a little water, 60 c.c. normal solution of soda is added, heated gently, and the excess of soda determined by normal acid. If the chloral hydrate was entirely pure 10 c.c. of normal alkali in excess of the required quantity has been used; if not each c.c. of normal acid in excess of 10 c.c. corresponds to 2 per cent. less of chloral hydrate. By, therefore, deducting the number of c.c. of normal acid, used to restore neutrality, from the 60 c.c. of normal alkali used, and multiplying by two, the percentage of chloral hydrate is accurately ascertained. Example:

8.28 grammes Chloral Hydrate, 60 c.c. Normal Alkali.
12.5 c.c. Normal Acid.
47.5 × 2 = 95 per cent. Chloral Hydrate.

Arch. Pharm., July, 1873, pp. 66–67.

According to the experiments of Dr. Hager neutral chloral hydrate in aqueous solution will, very soon after the addition of tincture of litmus, give an acid reaction, while in dilute alcoholic solution no acid reaction results. He therefore recommends that the neutrality of chloral hydrate be determined in solutions made with the dilute alcohol of the Pharm. Germ. The author has furthermore determined that when an aqueous solution of chloral has reddened litmus, and the blue color is then restored by the addition of a few drops of caustic alkali, the red color will reappear if the solution is allowed to stand for some time, or if it is brought to the boiling-point. He concludes that litmus has the property of decomposing chloral hydrate in aqueous solution. Ph. Centralhalle, 1873, No. 24, p. 202.

From his experiments on chloral hydrate Prof. Maisch is led to the assumption that pure chloral hydrate possesses an acid reaction, and is not neutral, as so generally supposed.

For this reason the heretofore supposed reliable tests of its purity are entirely out of place. See Proceedings, 1873.

Carl Jehn has observed that when oil of peppermint is brought in contact with chloral hydrate the mixture soon assumes a reddish color, and gradually becomes of a dark cherry-red color, which is taken up readily by ether, alcohol, and chloroform. The color is not destroyed by boiling; becomes more intense upon the addition of sulphuric acid, and if chloroform is then added the mixture assumes a dark violet tint.* Parallel experiments were made with the oils of lemon, bergamot, juniper, balm-mint, rosemary, cloves, anise, and fennel, but with negative results. Arch. Pharm., July, 1873, p. 29.

Mr. J. F. Browne, in Pharm. Jour. and Trans., March 14th, 1874, draws attention to the remarkable fact that when camphor, in fine powder, is rubbed in a mortar with an equal weight of pure crystallized hydrate of chloral the mass becomes damp, and slowly dissolves to form a syrupy liquid, strongly resembling glycerin in appearance. The change is accompanied by a rise in temperature of about three degrees Fahr., showing that chemical change of some kind must evolve heat more than sufficient to counterbalance the loss of sensible heat which always attends the passage of a substance from the solid to the liquid state; yet when distilled water is added, the mixture, after undergoing solidification, separates into the original substances, the chloral hydrate being in solution with the water. The combination is soluble without change in alcohol and in ether.

The fact of the curious reaction between camphor and hydrate of chloral seems to have been first obtained from American sources, whence it was recommended as a valuable local anæsthetic, useful as an application for neuralgia, toothache, etc. A. J. Ph., May, 1874, p. 238.

Croton Chloral Hydrate, which has lately come in demand in this country, is the subject of a paper by A. H. Mason, F.C.S., in which the author reviews the subject in its chemical and medicinal relations. As reference has been made to this interesting substance only in a short extract by Mr. Wenzell in the Report on the Progress of Pharmacy for 1871, the paper of Mr. Mason is extracted more comprehensively than would otherwise be necessary.

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* See page 219 of this volume.

Croton chloral was discovered by Krämer and Pinner (Ann. Chem. Ph., clviii, 37) quite accidentally during experiments on the action of chlorine and aldehyde, which were made in the hope of obtaining ordinary chloral; the authors endeavoring to arrive at a method for utilizing the first runnings obtained in the distillation of crude spirits, which consist mainly of alcohol, aldehyde, and paraldehyde. Chlorine was passed into aldehyde, at first carefully cooled in a freezing mixture, and only heated to 100° C. (= 212° F.) at the close of the reaction. The first few bubbles caused the separation of a small quantity of solid metaldehyde, whether originally present in the aldehyde, or formed by the reaction, is undecided. After a short time, evolution of hydrochloric acid set in, and every trace of chlorine was absorbed. With one hundred grains of aldehyde, at the end of twenty-four hours, no further absorption took place, even at 100° C. (= 212° F.). The resulting brown mass consists of two layers: a lower, darker, almost solid; and an upper, lighter colored, liquid layer. The latter is a saturated solution of hydrochloric acid and the bodies of the lower layer in water. As it was found impossible to separate these two well, the whole was submitted to distillation. A considerable quantity passed over between 90° and 100° C. (= 196° and 212° F.); the thermometer then rose rapidly to 160° C. (= 320° F.), and the main portion distilled over between this and 180° C. (= 356° F.). The temperature then rose to about 240° C. (= 464° F.), but only decomposition products were obtained, and a considerable carbonaceous residue remained in the flask. By means of fractional distillation, the portion boiling at 160° to 180° C. (= 320° to 356° F.) was quickly purified, and a body boiling at 163° to 165° C. (= 325.4° to 329° F.) was isolated, which proved to be crotonic chloral.

Mr. Mason prepared croton chloral according to the method of the abovenamed authors, and found the primary reaction to be very violent, necessitating many precautions to prevent explosion, and to condense the volatile products formed, and still to allow the enormous quantities of hydrochloric acid to escape. The process was completed after forty-eight hours, heat having gradually been applied from the time the liquid thickened. The crude product was *mainly* ordinary chloral; but yielded, by fractional distillation and treatment with sulphuric acid, true croton chloral, $C_4H_3Cl_3O$ ($O = 16$). This is a dense oily liquid of peculiar odor, somewhat recalling that of ordinary chloral. Treated with a considerable excess of warm water, it hydrates, dissolves, and upon cooling deposits croton-chloral hydrate ($C_4H_3Cl_3O,H_2O$ ($O = 16$)), but still in a crude form, and of most rank and offensive odor. It has to be purified by rather a tedious process, and is obtained, when pure, in beautiful white silvery crystals, with a sweetish melon flavor. It melts at 78° C. (= 172.4° F.).

Croton chloral is the substance represented by the same term in the allyl (C_3H_5 ($O = 16$)) group that chloral is in the ethyl (C_2H_5 ($O = 16$)) group. Its outward appearance (the hydrate?) differs from hydrate of chloral by the former being much lighter, and in flocculent silvery crystals; by its being almost insoluble in cold water,* and very soluble in alcohol. It is soluble in hot distilled water, and rendered more easily so by the addition of 25 per cent. of glycerin; it is insoluble in chloroform.

Mr. Mason states that by the action of alkalies it is decomposed and forms *allyl-chloroform, a trichlorate body, which is rapidly decomposed into a bichlorated substance called bichlor-allylen.*

Krämer and Pinner in their original paper state to the contrary, that the product of decomposition is not, as might have been expected, allyl-chloroform, but is dichlor-allylen ($C_3H_2Cl_2$ ($O = 16$)).

Mr. Mason also reviews the medicinal properties and application of the substance under consideration, and proposes, for convenience in dispensing, the following solution, which is regarded the strongest so obtainable, and is permanent:

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* I have found that "commercial" croton chloral-hydrate is soluble to a considerable extent in cold distilled water, and that, when dissolved in twenty-five parts of hot water, it will be retained in solution.—C. L. D.

Croton chloral-hydrate,	64 grains.
Pure glycerin,	½ ounce.
Hot distilled water,	1½ ounces.

A syrup can be made, containing two grains to the fluid drachm, by adding four ounces of simple syrup to the above solution, and the disagreeable taste may be removed by any flavoring the pharmacist may see fit to add. Chem. and Drug., Feb., 1874, p. 45.

Cinnamic Aldehyde.—The direct conversion of aldehydes into ketones has heretofore been an unsolved problem. A. Leist has made this the subject of experiment, and has succeeded in forming *aceto-cinnamyl* by heating together cinnamic aldehyde, methylic alcohol, and a dehydrating substance. For this purpose he mixed in a capacious retort, which was provided with a reverse condenser, 20.0 grammes cinnamic aldehyde with 5.0 grammes methylic alcohol, added 20.0 grammes perfectly dry chloride of zinc, and heated carefully for one day upon a sand-bath to 150° C. (= 302° F.). The mixture became dark rapidly and frothed considerably, was, after the heating, subjected to distillation, and the distillate was found to be composed of a light, colorless, aqueous, and a heavy, brown, oily liquid. The latter was subjected to fractional distillation, the fractions, 220° to 280° C. (= 428° to 536° F.), were treated with chloride of calcium to remove water, filtered, and again subjected to fractional distillation. The fractions, 240° to 245° C. (= 464° to 473° F.), proved, upon analysis, to be composed of aceto-cinnamyl. Arch. Pharm., July, 1873, pp. 71–72.

Isobutylic Aldehyde and *Isobutylic Alcohol*, obtained from the Kahlbaum Works, has been examined by G. A. Barbaglia, who found the isobutylic alcohol to contain large quantities of aceton, and that isobutylic alcohol was contaminated with various foreign substances, probably with a considerable amount of *isopropylic alcohol.* The author concludes that at present no industrial process is known whereby these substances can be prepared perfectly pure. Chem. News, Aug. 22d, 1873, p. 98; Ber. d. Chem. Ges., July 28th, 1873.

Active Amylic Alcohol.—There appears to exist *inactive* amylic alcohol boiling at 29° C. (= 84.2° F.) (?), the constitution of which is well known, and an *active* alcohol (amylic?) having a rotatory power of about 20° for a column of 50 centimetres. The latter is deprived of its rotatory power, according to J. A. Le Bel, by repeated distillation with potash. It boils, according to Pasteur, at 27° to 28° C. (= 80.6° to 82.4° F.) (?). The active alcohol has been less studied on account of the difficulty of its preparation. Chem. News, Dec. 12th, 1873, from Compt. Rend., Nov. 3, 1873.

Nitrite of Amyl.—E. Rennard reviews the various methods of its production, and has experimented with a view to determine that which is most satisfactory. The amylic alcohol for the purpose was prepared from raw fusel oil by washing it with caustic potassa and water, and then subjecting to distillation, collecting the portion that passed at a temperature of 132° C. (= 271.6° F.). The yield was two-fifths of the weight of the raw oil.

1. *Amylic Alcohol and Nitric Acid.*—When fuming nitric acid (25 grammes) is added gradually to amylic alcohol (30 grammes), and the flask is kept cool, no violent reaction takes place immediately, but after the lapse of about five minutes, the reaction becomes so violent as to throw a portion of the contents out of the flask. With nitric acid of sp. gr. 1.38 the reaction is still violent, and if nitric acid is to be used at all, the author recommends it of sp. gr. 1.30. The yield, however, is small, one-half of the alcohol being converted into valerianate and nitrate of amyl. From 15 grammes of amylic alcohol and 20 grammes of nitric acid (sp. gr. 1.30) but 6 grammes of a distillate, boiling at 100° C. (= 212° F.), was obtained. Subsequent experiments proved that nitrite of amyl was best prepared by acting upon

2. *Amylic Alcohol with Nitrous Acid.*—Thirty grammes of amylic alcohol is introduced into a tubulated retort provided with a Liebig's condenser, and heated by a water-bath to the

boiling-point of the water. The water is then removed and nitrous acid is passed into, near the bottom of, the retort, which causes the amylic acid to boil until about four-fifths has passed over. (The nitrous acid necessary for the quantity of amylic alcohol used is obtained by acting upon 5 grammes starch or sugar with 30 grammes nitric acid of sp. gr. 1.38, diluted with an equal volume of water.) The residue in the retort consists mainly of valerianic acid, the distillate of two layers, of which the upper is yellowish-green and is separated. It is then washed, first with water, then with solution of soda, or milk of magnesia, then again with water, and is then dried over chloride of calcium and rectified, the portion passing between 93° and 99° C. (= 199.4° and 210.2° F.) being collected separately. The yield, in the author's experience, was 23 grammes, and was of sp. gr. 0.877. Good results were also obtained by using nitrate of potassium, 26 grammes of which were moistened with 15 grammes of water, and then adding 60 grammes of sulphate of oxide of amyl, and distilling upon a water-bath. Twenty-four grammes of nitrite of amyl, purified as above, were obtained. This makes the ether expensive, however. A cheaper method is to use 60 grammes sulphate of oxide of amyl, 30 grammes nitrate of potassium, 6 grammes copper-turnings, and 15 grammes water. The yield is 19 to 20 grammes. The author recommends the second and fourth processes above mentioned for its preparation, and suggests that the pharmacist will do well to make the ether himself, as the commercial article, even when corresponding in specific gravity (= 0.877), may, and generally does, contain undecomposed amylic alcohol and other impurities. Ph. Centralhalle, 1874, No. 12, p. 89.

Carbolic Acid.—The poisonous effects of carbolic acid are due to the acid itself, and not to the alterations to which it is subject. Mr. Husemann has proved, by numerous experiments, that the alkalies and alkaline earths are true antidotes to this acid, while the fat oils, glycerin, etc., are entirely without effect. In cases of poisoning, it is necessary to use these antidotes in large excess and in solution; the saccharate of lime being employed successfully. The saccharate of lime for this purpose is obtained by digesting together for three days 16 parts of sugar, 40 parts of distilled water, and 5 parts of caustic lime, filtering, and evaporating to dryness. It dissolves readily in water. The Pharm., Nov., 1873, p. 331, from J. de Ph. et de Chim., 1873.

The following method of its purification is recommended by Mr. A. M. Read: Mix 1 ounce of Calvert's No. 1 acid with 10 ounces of distilled water, and, after frequent agitation, allow to stand until the supernatant solution becomes clear. This is poured off, and treated with finely powdered and purified common salt in excess, by which the carbolic acid is separated and floats on the surface. About 1½ drachm of carbolic acid remains undissolved in the 10 ounces of water, and retains the impurities contained in the acid. By using still less water a product was obtained by the author which, when mixed with an equal volume of ammonia-water (sp. gr. .900), formed a perfectly clear and colorless solution, and did not acquire a violet blue color until after standing nearly thirty hours. A. Jour. Ph., July, 1873, pp. 290–294.

Dr. J. Guareschi has found chloroform to be a very sensitive reagent for phenol—the reaction being decisive with 0.1 milligramme. A solution of phenol, to which potassa has been added, is evaporated to dryness, and the residue, while still warm, is mixed with chloroform; a splendid purple-red color is immediately developed, which, the author suggests, is probably due to the formation of rosolic acid. Chem. News, Oct. 3d, 1873, from Gazzetta Chimica Italiana, 1873.

Carbolic Acid v. *Creasote.*—Mr. A. M. Read, in a paper read before the National College of Pharmacy, explains some experiments made with carbolic acid and creasote, the results of which are exceedingly interesting. With reference to Morson's test for distinguishing between creasote and carbolic acid, he found that creasote of commerce, like carbolic acid, formed with glycerin a clear solution; Merck's creasote gave the same result, but Morson's was insoluble in glycerin of sp. gr. 1.253, even after three or four volumes had been added. Upon the addition of 23 per cent. of Calvert's No. 2 acid to

Morson's creasote, however, it formed a perfectly clear solution with creasote, and upon the addition of water to the three solutions of creasote (commercial, Merck's, and Morson's, to which carbolic acid had been added), they each became cloudy, and the creasote soon separated; while upon a solution of carbolic acid in glycerin, water had no effect whatever. The author, furthermore, found that carbolic acid is soluble in aqua ammoniæ fortior, U. S. P. (and also in aqua ammoniæ, U. S. P., although requiring a much larger quantity); while creasote was found to be insoluble in the same liquids. The contrary to both results is usually assumed to be true; Watts, Gmelin, and others, stating that carbolic acid is insoluble, and creasote soluble in aqua ammoniæ. Based upon his experiments, the author feels justified in recommending aqua ammoniæ fortior (sp. gr. 0.900) as a test to distinguish between carbolic acid and creasote. Chem. News, Sept. 5th, 1873; A. J. Pharm., 1873.

Iodoform is sometimes desirable in solution for topical application. According to MM. Odin and Lymarie, such a solution is best made from iodoform in a crystalline state, by dissolving 1 gramme in 4 grammes of ether, contained in a *red* glass flask, by simple agitation. When the solution is made in a white glass flask it soon becomes discolored, passing from canary-yellow to amber-yellow, and finally to brown; a portion of the iodine being liberated. Very similar results occur when the iodoform is powdered, previous to its solution in a red glass flask. Ph. Jour. Trans., Aug. 2d, 1873, p. 84, from Rép. de Ph., June 25th, 1873.

Glycerin.—MM. Champion and Pellet find that tribasic acetate of lead separates all the foreign substances due to normal impurity of the glycerin, or alteration during its manufacture. The color of glycerin is in no way an index of its purity. Unless glycerin is purposely adulterated, the authors consider that the test for organic matters by tribasic acetate of lead and for lime by oxalate of ammonium are all-sufficient. The quantitative tests for such glycerin should comprehend the determination of the water, the foreign organic matter, and the lime. The latter is estimated in the usual manner by oxalate of ammonium. The organic matter is estimated by treating 50 grammes of the glycerin, diluted with water, by excess of tribasic acetate of lead, collecting the precipitate on two tared filters, and weighing the lead compound. The whole is then calcined, the residue is treated with nitric acid, and then with sulphuric acid. From the sulphate is calculated the quantity of oxide of lead that was in combination with organic matter, and, consequently, the proportion of the latter, which rarely exceeds 1 to 1.5 per cent. The authors prefer the determination of the densities of glycerin by the use of specific-gravity hydrometers, to the use of Baumé's areometer; and they have determined the densities of glycerins, containing various proportions of water, the result being the annexed table. The density of pure glycerin was found to correspond with that given by Berthelot = 1.264, at 15 per cent. (= 59° F.), at which temperature the various densities were ascertained.

Specific Gravity.	Percentage of Water.	Specific Gravity.	Percentage of Water.	Specific Gravity.	Percentage of Water.
1.2640	0.0	1.2440	7.5	1.2242	15.0
1.2625	0.5	1.2427	8.0	1.2230	15.5
1.2612	1.0	1.2412	8.5	1.2217	16.0
1.2600	1.5	1.2400	9.0	1.2202	16.5
1.2585	2.0	1.2390	9.5	1.2190	17.0
1.2572	2.5	1.2375	10.0	1.2177	17.5
1.2560	3.0	1.2362	10.5	1.2165	18.0
1.2545	3.5	1.2350	11.0	1.2150	18.5
1.2532	4.0	1.2335	11.5	1.2137	19.0
1.2520	4.5	1.2322	12.0	1.2125	19.5
1.2505	5.0	1.2307	12.5	1.2112	20.0
1.2490	5.5	1.2295	13.0	1.2100	20.5
1.2480	6.0	1.2280	13.5	1.2085	21.9
1.2465	6.5	1.2270	14.0		
1.2455	7.0	1.2255	14.5		

Ph. Jour. Trans., Nov. 29th, 1873, p. 424; Monit. Scientifique-Quesnevill.

Glycerin is recommended as a solvent for subcutaneous injections by Dr. Constantin Paul, who considers it far superior to water, alcohol, etc., as it is neutral, can be kept easily, and is, of all liquids, the one which nearest approaches to the composition of subcutaneous cellular tissue. Med. News, Sept., 1873, p. 150; Lancet, Aug. 2d, 1873.

Dichlorhydrin may be prepared, according to A. Claus, as follows: To 800 grammes of glycerin (concentrated to boil at 195° C.) (= 383° F.), contained in a 2 litre flask, 2 kilos of chloride of sulphur is gradually added with constant stirring, while the mixture is heated in a salt-bath. Heat is applied, with cohobation, for seven or eight hours, and the cohobation-tube is then removed to drive off sulphurous and hydrochloric acids. When the mass is cool, 2 or 3 volumes of ether are added, the deposit of sulphur is filtered off, the ether is distilled off, and the residue is submitted to distillation over the open fire. After thrice repeated rectification pure dichlorhydrin is obtained, boiling at 178° C. (= 362° F.). When dichlorhydrin is heated with alcoholic ammonia to 105° C. (= 221° F.) in a sealed tube, one of the products is an amorphous, gelatinous body.

Chlorhydrinimid.—$C_{22}H_{27}N_3Cl_2O_4$ ($O = 16$).—This is white, insoluble in water, alcohol, ether, and even in concentrated acids. The author also describes

Di-iodhydrin, which is a pale yellow, thick oil, of sp. gr. 2.4 at a temperature of 15° C. (= 59° F.), and congeals at 16° to 20° C. (= 60.8° to 68° F.) to a colorless crystalline mass. Chem. News, Aug. 15th, 1873; An. Chem. Ph., vol. clxviii, No. 1.

FIXED OILS AND FATS.

Castor Oil.—The experiments of Buchheim convince him that castor oil does not contain an acrid substance ready formed, but that such is formed as soon as ricinolic acid is liberated from its glycerin combination. The author had previously advanced the opinion that the peculiar acridity of ricinolic acid was due to a substance foreign to, but pertinaciously retained by it. Vierteljahrschr. Ph., 1873, No. 4, pp. 481–484.

Croton Oil.—Based in part upon his own experiments and partly upon a review of the experiments of others, Buchheim submits the following view of the constitution of croton oil: The volatile acids contained in croton oil, to which the peculiar odor of the oil is due, which do not amount to above 1 per cent., and which, according to Geuther, consist of a mixture of acetic, butyric, valerianic, and tiglinic acids, do not pre-exist in the fresh croton seeds, but are produced by the action of atmospheric air upon the non-volatile acids, especially crotonolic acid, and do not contribute to the activity of the oil.

The non-volatile acids, which in the oil are contained partly in a free state, are probably contained in the recently ripened seeds as glycerides, which are, by the influence of a ferment, very soon decomposed, and the free acids thus liberated. These are, according to Schlippe, stearic, palmitic, myristic, and laurinic acids, belonging to the fatty series, and oleic and crotonolic acid, which do not belong to that series. The activity of croton oil is exclusively due to the last named, the crotonolic acid. Resin does not pre-exist in croton oil, but by the action of alkalies and atmospheric air upon crotonolic acid, a brown, bitter, resinous product of decomposition is formed, which is insoluble in ether, and, according to the author's and Schlippe's experiments, is inactive. Vierteljahrschr. J. Ph., 1873, No. 4, pp. 485–507.

Linseed Oil.—According to Aug. Morrell, linseed oil is lately adulterated to a considerable extent with cod oil (cod-liver oil?), the adulterant being deprived of its odor to such an extent, that it is impossible to detect it either by its odor or by the external appearance. The author finds that it may be detected, however, by mixing 10 parts (by weight) of the suspected oil with 3 parts of crude nitric acid, and then allowing the mixture to stand, when the oil will soon separate from the acid. If the linseed oil has been adulterated with cod oil, the oily layer assumes a dark to black-brown color, while the acid is of a light orange, orange, or dark-yellow color, according to the degree of the adulteration, 3 per cent. being detectible in this way. Pure linseed oil, treated in the same way, is changed to a sea-green, and finally greenish-yellow;

while the acid separates of light yellow color. Ph. Centralhalle, 1873, No. 40, p. 338.

Woolfat.—The statement made by Hartmann in 1863, that the fatty matter in wool contains no glycerin, and that by decomposing it with alcoholic solution of potassa, a substance producing the reactions of cholesterin is obtained, is proven to be correct by the experiments of E. Schulze, who has determined also, that cholesterin exists in woolfat, both in the free state and in the form of compound ether. Ph. Centralhalle, 1873, No. 33, p. 288, from Ch. Centralbl.

Stearic Acid.—An improvement in its preparation is proposed by Deiss. It consists in adding to the raw fatty acid about 20 per cent. of bisulphide of carbon while in the melted state, allowing it to cool, and then subjecting to expression. By this procedure the stearic acid is obtained entirely free from oleic acid. Ph. Centralhalle, 1874, No. 18, p. 138.

Oleo-Stearates.—Dr. Arthur Van Harlingen recommends the preparation and the therapeutic employment of the oleo-stearates of various metallic oxides, and of alkaloids, all of which are readily prepared by precipitation from a solution of oleo-stearate of sodium (almond soap). The metallic salt should be chosen which precipitates most easily; thus, for iron or copper the sulphate, for mercury the pernitrate, etc., etc. For the oleo-stearates of the alkaloids, the chlorides of morphia, quinia, etc., are used. The oleo-stearates allow, by their easy solubility in fatty substances, the exhibition of many valuable medicinal agents. Their use is exemplified by the following formula: ℞. Oleo-stearate of zinc (dry), 3 parts; mutton suet, 15 parts; oil of sweet almonds, 15 parts. Slowly incorporate the zinc compound with 1 part oil of almonds in a slightly warmed porcelain mortar, and add, little by little, the melted and partially cooled mixture of the remainder of the oil with the suet. In making the oleo-stearates, care must be taken to employ the solution of almond soap in slight excess, the presence of which is recognized by the milky tint of the supernatant fluid, the latter being clearly separated from the precipitated oleo-stearate. Am. Jour. Ph., Jan., 1874, and Med. Times, 1874, from Bull. Gen. de Therapeut.

STARCHES, SUGARS, ETC.

Starch.—The experiments of August Vogel seem to indicate that starch is under certain conditions actually dissolved by water, and not mechanically suspended, as is usually assumed. He finds that when white wafers—which are made from starch and do not contain dextrin—are macerated in water, a solution is formed, which, when filtered through several layers of extremely dense filtering-paper, forms a perfectly clear liquid, in which none of the particles of amylon can be observed. He recommends such a solution as a reagent. N. Rep. Pharm., 1874, No. 6, p. 7.

Starch in Milk.—The contradictory results of two experimenters with milk which had been adulterated with starch, induce Hager to refer to the peculiar reaction of milk upon iodine, already noticed by him in Pharm. Centralhalle, 1869, No. 10. The lacto-protein bodies possess the property of combining rapidly with iodine and decolorizing iodine solutions. Consequently the reaction for starch in milk does not become evident until the milk is completely saturated with iodine. Pharm. Centralhalle, 1873, No. 29, p. 242.

Iodized Starch.—An exceedingly stable compound of starch and iodine was produced, by E. Sonstadt, by keeping starch for two months in a solution of salts containing more free iodine than the starch could combine with. The iodized starch, when washed upon a filter until the washings passed nearly colorless, was washed by decantation until the water was colorless after settling, and when air dry presented a black color, possessed very little, if any, odor, and contained 3.2 per cent. of iodine. Heated in an oven, a little above the temperature of boiling-water, it gave off a perceptible odor of iodine, but retained its color perfectly, and was found on analysis to still contain 3.2 per cent. of iodine. A portion was heated to charring in a covered crucible, and at last was brought for about ten minutes, to low redness. The charcoal proved on analysis to contain 3.2 per cent. of iodine, equal to 19.64 per cent. of the iodine contained in the specimen before conversion into charcoal. The stove-dried compound is extremely stable, and the ordinary reagents attack it but slowly; it could not, for example, be analyzed by treatment with thio-sulphate of sodium and chlorine, and the author finally had to prepare it for analysis by moistening it with a strong solution of hydrate of soda, and heating to redness. Chem. News, Nov. 14th, 1873, p. 248.

Arabin.—It has been determined by Scheibler that the metapectic acid, found by Fremy in the beet-root, is really arabin.

The arabin was prepared by expressing the beets so as to remove the juice as completely as possible; then macerating the press-cake—properly divided—twice in alcohol for two hours, expressing well each time; then heating the residue with water, and when all the alcohol retained by it is evaporated, adding milk of lime, and exposing to the heat of a water-bath for a short time longer. The solution so obtained—containing arabate of calcium—is expressed, and treated with carbonic acid to remove excess of lime. It is then filtered, evaporated upon a water-bath, again filtered, treated with acetic acid, and precipitated with alcohol. The alcohol is decanted from the precipitated arabin, which is then again dissolved in water, filtered, and again precipitated by alcohol; and this alternate solution and precipitation is repeated a number of times. To obtain it entirely pure, the aqueous solution is finally mixed with alcohol until a faint precipitate forms, is then allowed to stand twenty-four hours, by which time the remaining inorganic matter has separated, and, after decanting the clear solution of arabin, it is precipitated with excess of alcohol.

The arabin so obtained possessed all the properties of arabin from gum arabic, as did also the sugar obtained by boiling it with sulphuric or muriatic acid, with that obtained from gum arabic by similar treatment. Both sugars had the same melting-point, the same crystalline form, and same rotating power (to the right). Arch. Pharm., July, 1873, pp. 73 to 76; Ber. d. d. Ch. Gesel., 1873.

Triticin—($C_{24}H_{22}O_{22}$) is the name given by Herm. Müller to a gum obtained by him from the root of Triticum repens, L., in which it is contained to the amount of 6 to 8 per cent., and for the isolation of which the author gives his method. As obtained by the author, it was in thin transparent scales, which, when pulverized, formed a white powder, neutral, odorless and tasteless, and exceedingly hygroscopic; soluble in water in all proportions; insoluble in absolute alcohol and ether; sparingly soluble in alcohol of 80 to 90 per cent., and becoming more soluble as the alcohol is more dilute. Its solutions rotate to the left; and when its aqueous solution is boiled for some time, it is partly converted into levulose, the conversion being more rapid if the heating is conducted under pressure. The conversion into sugar is also facilitated if the solution contains a relatively large quantity of triticin. Yeast does not seem to possess the power to cause it to undergo alcoholic fermentation, which was, however, rapidly induced upon the addition of diastase. Dilute sulphuric acid, as well as diastase, rapidly convert triticin into levulose, as does also dilute muriatic and dilute nitric acid. By concentrated nitric acid it is not converted into mucic acid, but into oxalic acid. With the alkalies and alkaline earths it seems to form definite compounds. It is not precipitated from its aqueous solution by either acetate or subacetate of lead, but when its solution is mixed with alcohol, and is then treated with solution of subacetate of lead to which alcohol has been added, a voluminous precipitate is produced, which the author found to correspond to the formula $C_{12}H_{20}PbO_{11}$ ($O = 16$). Arch. Ph., June and July, 1873.

Cane-Sugar.—The general assumption that pure cane-sugar in aqueous solution is not changed at ordinary temperatures is modified by Raoult to the extent that, besides the exclusion of air, light must also be excluded. Sugar solutions, introduced into colorless glass tubes, caused to boil a few minutes, and then sealed, were laid in the same place, the one exposed to the light, the other protected. At the expiration of five months the solution which had been protected from the light was found unchanged, while that which had been exposed to it contained grape-sugar amounting to nearly 50 per cent. of the cane-sugar originally introduced. Compt. Rend., lxxiii, p. 1049; Arch. Ph., Sept., 1873, p. 242.

Purification of Sugar Solutions.—The modes of purification at present employed in sugar works are almost all based upon the action of lime and its subsequent elimination by means of carbonic acid. They all leave in the saccharine products a certain proportion of organic matter and of mineral salts, which, to a certain extent, prevent the crystallization of the sugar, and are the cause of the formation of treacle. P. Lagrange proposes to eliminate the organic salts of lime, the lime and soda salts of certain vegetable acids, and the alkaline sulphates, by combining the action of baryta and of phosphate of ammonia. After the removal of the lime, dissolved in the sugar in the usual way, the remaining lime salts, which are not decomposed by carbonic acid, are then removed by phosphate of ammonium. The juices and syrups so freed from lime would, however, quickly become neutral and acid, and baryta or sucrate of barium is therefore added to keep the liquor alkaline. The latter has a twofold object. It decomposes the alkaline sulphates, and also several organic salts of potassium and sodium, giving rise to compounds insoluble in an alkaline medium, and liberating potassa and soda, serves to maintain the alkalinity of syrups freed from lime.* Chem. News, Jan. 9th, 1874, from Compt. Rend., Nov. 24th, 1873.

Sugar forms with chloride of potassium, according to Ch. Violette, a well-defined crystalline compound, which is isomorphous with sugar, and not deliquescent. The author gives to the compound the formula $C_{12}H_{20}KClO_{11}$ $(O = 16)$. Arch. Ph., Dec., 1873, p. 553; Compt. Rend., pp. 76–485.

Monobasic Saccharate of Calcium. — The preparation of a monobasic saccharate of calcium, which had heretofore been unsuccessful, has been the subject of experiment by R. Benedict, who has succeeded in preparing it. When a sugar solution is treated with excess of lime a mixture of mono and bibasic saccharate of lime is produced. If to this chloride of magnesium is added, one-half of the lime of the bibasic saccharate decomposes the magnesia salt, hydrate of magnesia is deposited, and chloride of calcium and mono-saccharate of calcium remain in solution. From this solution the mono-saccharate is obtained by precipitation with alcohol, and washing with 60 per cent. alcohol, carefully excluding carbonic acid. The precipitate is then dried under the receiver of an air-pump until it has become brittle and transparent at the edges, in which condition it may be dried at a temperature of 100° C. (= 212° F.) without fear of decomposition by the carbonic acid of the atmosphere. The substance dried under the receiver of an air-pump was found to have the composition $C_{12}H_{20}CaO_{11}+2Aq$ ($O = 16$), and when dried at 100° C. (= 212° F.) was found to have lost the water, its composition being $C_{12}H_{20}CaO_{11}$ ($O = 16$). Arch. Ph., Sept., 1873, p. 240.

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* The above suggestions are possibly intended chiefly for the manufacture of beet-root sugar.—C. L. D.

Glucose.—It is recommended in Chem. Centralbl., 3d series, vol. iv, p. 37, that urine containing but small quantities of glucose be filtered several times through animal charcoal until completely decolorized before applying Fehling's test, the colorless liquid affording a much better glucose reaction than the original urine. This treatment cannot be resorted to, however, for the quantitative determination of the glucose. Arch. Pharm., June, 1873, p. 565.

Glucose and Lactose.—To distinguish these sugars from saccharose, M. Campani employs as reagent a concentrated solution of subnitrate of lead mixed with a dilute solution of acetate of copper. The liquid to be tested is added to 5 centimetres of this solution and caused to boil, when, if glucose or lactose is present, the mixture becomes colored, and gives a yellow precipitate, or, if the sugar solutions are concentrated, a brick-red precipitate, while cane sugar has no action. Chem. News, Sept. 26th, 1873, from Les Mondes, Sept. 11th, 1873.

New Volatile Saccharine Matters from Caoutchouc.—Aimé Girard had previously described (Compt. Rend., lxvii, p. 820, and lxxiii, p. 426) two new volatile and saccharine matters.

Dambonite, $C_8H_8O_6$, extracted from caoutchouc of the Gaboon; and

Bornesite, $C_{14}H_{14}O_{12}$, obtained from the caoutchouc of Borneo. Both these, on treatment with hydracids, are split up into methylic ethers on the one hand, and into crystalline non-volatile saccharine matters on the other, possessing the composition of dried glucose. A third substance of this kind is

Matezite, obtained from caoutchouc of Madagascar. It is white, crystalline, very soluble in water, less so in alcohol, from which it separates in the form of mammillary crystals, which are hard and gritty under the teeth. It fuses at 181° C. (= 357.8° F.) to a vitreous mass, sublimes slowly, without decomposition, at 200° to 210° C. (= 392° to 410° F.), the sublimate taking the form of transparent drops. Its composition is $C_{20}H_{20}O_{18}$. Chem. News, Dec. 12th, 1873, from Compt. Rend., Nov. 3d, 1873.

ORGANIC ACIDS.

Organic Acids.—The observation of H. Werner that a weak solution of oxalic acid in distilled water was, when exposed to the air occasionally, rapidly decomposed, induced him to extend his experiments upon other organic acids. Solutions of oxalic, succinic, citric, tartaric, tannic, benzoic, and pyrogallic acid, in the proportion of 1 : 1000, were prepared, and exposed several times daily to the influence of the air by removing the cork. The decomposition in the solutions was evidenced by the formation of fungi on the bottom of the vials in which they were contained, and was most rapid in the oxalic acid solution, and nearly as rapid in the succinic and citric acid solutions; but the oxalic acid had been completely decomposed when the latter still exhibited decided acidity. Tannic and tartaric acids seem to be very much less favorable to fungus growth, which is the more remarkable with reference to tartaric acid, in consideration of the rapidity with which solutions of its salts become mouldy. Benzoic and pyrogallic were not decomposed at all. Arch. Pharm., June, 1873, pp. 522–527.

Formic Acid.—Lorin had already previously pointed out the principal phenomena resulting from the reciprocal action of oxalic acid and glycerin. He now finds that the same acid gives identical results with ordinary glycol, octylic glycol, erythrite, mannite, dulcite, and quercite. The author obtained from 65.25 kilos of oxalic acid 42.14 kilos of formic acid of 54.6 per cent. = 23.004 kilos of pure acid, by following the following method: 1.120 kilos of pure glycerin and 3 kilos of powdered oxalic acid were placed in a roomy retort. The reaction was kept up by making successive additions of the acid, morning and night, in such quantities that the original level of the mixture was kept up; the retort being cooled a little before each addition. Chem. News, Nov. 21st, 1873, from Bull. Soc. Chim., Oct. 5th, 1873.

Acetic Acid has been found adulterated with glucose to the amount of 8.86 per cent. It contained 24 per cent. of acetic acid; had been bought for pure acid of 10° B., but indicated 13.5° B. = sp. gr. 1.085. It also contained considerable sulphuric acid. Arch. Pharm., June, 1873, p. 565.

Vinegar Formation.—The investigations of Knieriem and Mayer show that the presence of *Mycoderma aceti* is indispensable to the formation of vinegar from alcohol, its action being in all probability purely physiological. It is very sensitive to the rapid change in acid strength, and hence the practical method pursued in the preparation of vinegar, *i. e.*, to allow the fermenting vinegar to pass through a series of acidifying tanks, is the most suitable. Acidification will take place in the absence of nitrogenous nourishment, but is most rapid in the presence of highly organized nitrogenous substances. The Mycoderma aceti thrives but sparingly at temperatures below 18° C. (= 64.4° F.), and acetic fermentation goes on correspondingly slow. Ozonized air does not oxidize alcohol to acetic acid. Ph. Centralhalle, 1874, No. 13, p. 102.

Butyric Fermentation.—G. B. Grillone observes that considerable quantities of butyric acid was generated under the following conditions: An extract of 5 kilos of rice in 60 litres of boiling water was prepared, and, after twenty-four hours, 60 grammes of malt, 2 litres of milk, 1 kilo of minced flesh, and 3 kilos of white chalk were added. The whole was allowed to ferment in a covered wooden vessel at the summer temperature, 25° to 30° C. (= 77° to 86° F.). When gas ceased to be developed the liquid was raised to 80° C. (= 176° F.), filtered, mixed with carbonate of sodium as long as a precipitate was produced, the carbonate of calcium filtered off, the filtrate concentrated to a small volume, and mixed with sulphuric acid, when a considerable quantity of crude butyric acid separated, and was freed from accompanying products by fractional distillation. Chem. News, Oct. 3d, 1873, from Gazetta Chimica Italiana, 1873.

Valerianic Acid may be obtained, according to O. Ficinus, by a process analogous to the quick-vinegar process. The acidifiers are filled with valerian root instead of beechwood shavings, and the diluted fusel oil is allowed to flow through repeatedly at a temperature between 30° and 40° C. (= 86° and 104° F.). The process being a slow one, and the conversion of the fusel oil into valerianic acid incomplete (amylaldehyde and valerianate of oxide of amyl being largely formed), it only possesses value from a scientific view, the ordinary methods being in every way more profitable to the manufacturer. Arch. Ph., Sept., 1873, p. 219.

Pinalic Acid.—Friedel and Silva, who in a former communication described *pinacolic* alcohol derived from *pinacolin*, and have announced that the oxidation of this alcohol reproduces pinacolin, and that the latter in turn, oxidized by bichromate of potassium and sulphuric acid, yields an acid isomeric with *valerianic acid*, have since continued the study of this acid, which they have named *pinalic acid*, and observe that it has a considerable resemblance to the trimethylacetic acid of Boutlerow. Chem. News, Aug. 1st, 1873; Compt. Rend., July 7th, 1873.

Benzoic, Salicylic, and Hippuric Acids.—These acids produce, according to T. L. Phipson, the following curious reaction when mixed with glucose, in the proportion of three equivalents of the acid to one equivalent of the glucose, and then mixing with a large excess of monohydrated sulphuric acid and warming slightly.

Benzoic Acid, in such mixture, develops a fine blood-red color, very similar to that produced when salicin or willow bark are touched with concentrated sulphuric acid, and after awhile the mixture becomes brown, and then blackens. Benzoic acid alone does not produce this reaction. It matters little whether the glucose is artificial or natural.

Salicylic Acid, with glucose, treated in the same manner, presents the same reaction in a still more decided manner.

Hippuric Acid, with glucose and sulphuric acid, gives first a clear brown mixture, in which also the blood-red color soon develops itself; then the whole mass becomes black, and evolves a large quantity of an odorless and colorless gas, which the author concludes to be chiefly oxide of carbon. As the reaction continues after this time, after the source of heat is withdrawn, the mixture soon becomes very hot, and then sulphurous acid is evolved. Chem. News, July 11th, 1873, p. 13.

Biazo-benzoic Acid.—Victor Meyer and W. Michler have found that when a 5 per cent. sodium amalgam is allowed to react upon a solution of binitrobenzoic acid in caustic soda, a black solution is formed, from which, upon the addition of an acid, a velvet-black substance is deposited, which they have called *biazo-benzoic acid*. It is insoluble in alcohol, ether, benzol, and glacial acetic acid; but is dissolved by alkaline solutions, forming salts. With the other bases it forms insoluble compounds. These characters seem to identify the new acid with the various humus substances. Arch. Ph., March, 1874, p. 275; Ber. d. d. Ch. Ges.

Amygdalic Acid* ($C_8H_8O_3$) ($O = 16$).—The usual methods of its production yielding but small quantities, Otto Müller has experimented and succeeded in obtaining it in comparatively large quantities. By agitating together oil of bitter almonds and bisulphite of sodium he produced a double compound of benzyliden and bisulphite of sodium, which is insoluble in alcohol. This compound was boiled upon a water-bath, with 50 per cent. of cyanide of potassium and a considerable quantity of alcohol of 90 per cent., for about nine hours, in a flask with reversed condenser, when a heavy crystalline precipitate was produced, which proved to consist chiefly of the sulphate of sodium and potassium, and a dark-brown supernatant liquid resulted. The dark-brown alcoholic liquid was concentrated to syrupy consistence; the syrupy liquid was treated with dilute hydrochloric acid; the acid solution produced was evaporated; the residue was treated with water; the aqueous solution filtered, and evaporated with excess of carbonate of barium. The dry mass, consisting of amygdalate and carbonate of barium, was washed upon a funnel with a mixture of three parts of ether and one part of alcohol until the washings passed colorless, was then triturated with sufficient water to form a thin pasty mass, a minute excess of sulphuric acid added, and was then shaken several times with ether. The ethereal solution yielded upon evaporation, purification with animal charcoal, and several recrystallizations, handsome amygdalic acid, possessing a crystalline form, taste, odor, and solubility, which corresponded completely with the description heretofore given. Its melting-point, heretofore unknown, has been ascertained to be 115° C. (= 239° F.). Arch. Ph., 1873, pp. 385–388.

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* This phenylglycolic acid is not to be confounded with amygdalinic acid, the product of the decomposition of amygdalin by alkalies.

Podocarpinic Acid.—A. C. Oudemans, Jr., has succeeded in isolating, from the crystalline resin, found in some old specimens of the wood of *Podocarpus cupressina var. imbricata*, a new resinous acid, to which he has given the above name. It was obtained by repeatedly crystallizing the crude resin from weak alcoholic solution. The new acid is insoluble in water; nearly insoluble in benzol, chloroform, and bisulphide of carbon; and readily soluble in alcohol, ether, and strong acetic acid. It melts at 187° to 188° C. (= 368.6° to 370.4° F.); is decomposed above 330° C. (= 626° F.) and has a composition corresponding to $C_{17}H_{22}O_3$ ($O = 16$). While the acid is monobasic, it is capable of forming two series of salts, and besides several superacid salts. By the destructive distillation of its calcium salt a tarry product is formed, from which by the aid of steam *paracresol* (C_7H_8O ($O = 16$)) and a hydrocarbon, *carpen* (C_9H_{14} ($O = 16$)), are obtained. By fractional distillation the tarry residue will yield *hydrocarpol* ($C_{16}H_{20}O$ ($O = 16$)) and methanthrol ($C_{15}H_{12}O$ ($O = 16$)), both of which are related to phenol. Arch. Pharm., March, 1874, pp. 275–276.

Ferrous Tartrate ($C_8H_4O_{10},2FeO$), is obtained by C. Méhu, perfectly white, permanent in the air, and of a constant composition, by gently boiling together equal weights of small iron tacks, tartaric acid, and water. Hydrogen is abundantly disengaged, and little by little, a perfectly white gritty deposit appears, and the liquid acquires the consistence of soup. By repeated additions of distilled water the liquid is maintained at the same level, and when a sufficient quantity of ferrous tartrate is formed, it is separated from the undissolved iron by decantation, which is readily accomplished, and washed upon a filter with boiling water, until the washings no longer contain traces of acid. This is very important, as the presence of even minute quantities of free acid causes the preparation to change very readily to tartrate of peroxide. The acid washings are again poured over the undissolved iron for the formation of a further quantity of tartrate. The washed magma of ferrous tartrate is well drained, divided into tablets, and dried quickly in a moderately heated stove. The final washing may be by alcohol, by the use of which the magma is more rapidly dried.

So prepared ferrous tartrate is a well-defined white salt, in very clear microscopic crystals, which may be preserved indefinitely, even in the light, without any necessity for special precaution. It has no tendency to oxidize if it contains no free acid, is not dissolved by solutions of citric, tartaric, or acetic acid, or by chloride of ammonium; but is readily dissolved by water acidulated by sulphuric or hydrochloric acid, forming solutions which, colorless at first, afterwards gradually become yellow. By dissolving the salt in excess of solution of ammonia, a greenish solution is formed, which gradually, by oxidation, acquires the color of caramel, and the consistence of jelly; but as the oxidation proceeds it becomes more limpid, and, finally, when the oxidation is complete, a thin, limpid solution of

Tartrate of Peroxide of Iron and Ammonium is formed, and upon evaporation at 100° C. (= 212° F.), and drying upon glass plates, is obtained in transparent scales, and of a composition corresponding to $C_8H_4O_{10}Fe_2O_3NH_3+2HO$. The salt is very soluble in distilled water, and insoluble in alcohol. When this salt is made, as is usual, by dissolving hydrated peroxide of iron in bitartrate of ammonium, it is not as pure, and owing to the length of time required to dissolve the peroxide, has a tendency to lose a portion, and, finally, all the ammonia, leaving tartrate of peroxide of iron. Ph. Jour. Trans., Sept. 13th, 1873; Jour. de Ph. et de Chim., 1873.

Citric Acid.—Dr. Graeger has found red bilberries (the fruit of Vaccinium vitis idæa) an economical source of citric acid. The juice, which contains besides citric acid, also malic acid, is expressed from the berries, which are twice macerated and expressed with as much water as juice was originally obtained; the united liquids are treated with solution of gelatin, as long as a precipitate is formed, to separate tannin; the liquid, which becomes clear rapidly, is decanted, the residue is expressed, filtered, and mixed with the clear liquid, which is then saturated with chalk. It is then boiled until a filtered portion no longer becomes turbid upon further boiling (from precipitation of citrate of calcium), and the citrate of calcium is separated and washed with boiling water until the washings pass colorless; when a snow-white salt remains, which is decomposed by an equivalent of sulphuric acid (ascertained by experiment). The solution of citric acid so formed is separated from sulphate of calcium, the latter is washed carefully to remove the citric acid held by it, and the united liquids, which possess scarcely a faint red tinge, are filtered through animal charcoal, concentrated, filtered from sulphate of calcium that had been retained in solution, and crystallized. By simple recrystallization the citric acid is obtained perfectly pure. N. Jahr. Ph., 1873, pp. 193–197.

Ferrous Citrate ($C_{12}H_5O_{11},2FeO+3HO$) is obtained, according to Méhu, in the same manner as he obtains the ferrous tartrate (see page 254). By prolonged ebullition of equal weights of acid, iron tacks, and water, a ferrous citrate is obtained perfectly white, gritty, crystalline, dense, and particularly easy to separate from excess of iron. It is more soluble in water than is the tartrate, and is scarcely precipitated from its saturated aqueous solution by alcohol, unless there be excess of acid. Direct sunlight colors the crystals red upon the surface, but the oxidation penetrates only a little way below the surface, and is also very slow. During the drying of the magma it is more apt to be changed than is the ferrous tartrate, and it is only by taking great precaution that the salt can be obtained dry and white. It dissolves immediately in solution of ammonia, with great evolution of heat, very readily oxidizes, producing

Citrate of Peroxide of Iron and Ammonia ($C_{12}H_5O_{11}Fe_2O_3NH_3+3HO$), and upon evaporation and drying with heat produces very fine scales, of constant composition. This method of preparing the salt presents no difficulty, avoids the long and troublesome process of preparing hydrated peroxide of iron, and is of more constant composition than when prepared by the ordinary methods. Ph. Jour. Trans., Sept. 13th, 1873, pp. 203–204; Jour. de Ph. et de Chim., 1873.

Citrate of Iron and Quinia.—Mr. C. Umney reviews the history of this salt, and states that the present formula of the British Pharmacopœia for its preparation yields an unexceptionable compound. He finds, however, that the test of quinia strength given by that standard is inaccurate, as the salt, when properly prepared, contains but 15.54 per cent., the Pharmacopœia stating 16 per cent. When making the test strictly according to the British Pharmacopœia, but 14.2 per cent. can be obtained as a precipitate, and of the remainder, 0.8 per cent. can be obtained by washing the filtrate with ether or chloroform, etc. Ph. Jour. Trans., Aug. 30th, 1873, p. 161.

Propionic Acid has been prepared by Pierre and Puchot from pure propylic alcohol, which they had prepared in considerable quantities, by oxidation with bichromate of potassium and sulphuric acid. The propionic acid was examined by them, and they found that in its most concentrated condition its formula corresponded to $C_6H_5O_3HO$; it boils at 141.5° C. (= 286.7° F.), has the combined odor of glacial acetic and butyric acids, and a specific gravity at 0° C. (= 32° F.) of 1.0143; at 49.6° C. (= 131.28° F.) of 0.9607; at 99.8° C. (= 211.64° F.). The crystallized propionate of barium corresponds to the formula $C_6H_5O_3,BaO,HO$, while the silver salt is anhydrous. Arch. Ph., Sept., 1873, p. 245; Journ. de Ph. et de Chim.

Lactic Acid.—The article of commerce is derived exclusively from Europe, and has been the subject of experiment by Mr. Charles Rice, with a view to determine its quality and relation to the requirements of the Pharmacopœia. He examined six varieties from different German manufacturers and of different dates of manufacture, and found them, with one exception, to meet the requirements of the United States Pharmacopœia. He does not, however, seem disposed to censure the manufacturer of the last-named article, which was of an earlier date than the others, believing that since the demand has sprung up in this country the European manufacturers have endeavored to make it up to our standard. A. Jour. Ph., Sept., 1873, pp. 388–391.

Succinic Acid.—Maleïc acid has been converted into succinic acid in certain phases of fermentation, and the same transformation is effected in an analogous manner, and more regularly, under the influence of hydrogen. Now M. E. Bourgeon has observed an *inverse reaction* while examining the effects of heat upon the succinate of silver, part of the salt being split into silver and maleïc acid. Chem. News, Aug. 1st, 1873; Compt. Rend., July 7th, 1873.

Quinovic Acid.—In his paper upon the separation of the mixed alkaloids from cinchona barks, Dr. J. E. De Vrij gives his method of determining the amount of quinovic acid contained in the bark, and which remains, along with fatty substances, upon the filter during a certain stage of the process (see Alkaloids, in this report). As the amount of quinovic acid is very small, the amount can rarely be ascertained with accuracy, unless the amount of bark be not under 40 grammes. As he generally makes two analyses of 20 grammes of the same bark, he combines the mixture of quinovic acid, etc., of the two filters, and if the two analyses are carefully performed under the same circumstances, he obtains perfectly satisfactory results, as follows: The mixture is treated with a weak solution of caustic soda, by which a great part of it is dissolved. If to the turbid solution a slight excess of chloride of calcium is added, only the quinovate of calcium remains in solution, and is precipitated from this solution, after filtration, by the addition of hydrochloric acid, forming a voluminous jelly. Ph. Jour. Trans., Sept. 27th, 1873, p. 241.

Cubebic Acid has been the subject of investigation by C. F. Schulze, and he has obtained results which differ materially from those of Bernatzick, who, by his experiments in 1863, rendered its existence probable. An ethereal extract of cubebs is heated with solution of caustic soda of sp. gr. 1.081 (= 8.487 per cent.), and allowed to cool, when a layer of soap separates upon the surface, while in the liquid beneath crystals form. The soap is removed, again heated with solution of soda of the same strength, when a small additional crop of crystals separates, and by concentrating the liquids separated from the soap and crystals to about one-third of their volume, additional crystals, in small quantity, are obtained. These crystals are cubebate of sodium, which seems to be insoluble in the alkaline solution, as by the addition of chloride of barium to the solution, carbonate of barium only is precipitated. The crystals of cubebate of sodium are purified by repeated crystallization from alcohol, and then form handsome white needles, possessing a very bitter and acrid taste. They rapidly become darkened when exposed in a moist condition to the atmosphere, and by concentrated sulphuric acid are colored scarlet. Their composition is $NaO,C_{28}H_{15}O_7+4HO$. The cubebic acid was isolated by decomposing the solution of cubebate of sodium with sulphuric acid, by which it was separated in the form of a resinous mass, which, when further purified, proved to be incapable of crystallizing either from its solution in ether, chloroform, bisulphide of carbon, benzin, or petroleum ether. Its color is faint yellow, but becomes darker when exposed to the air. Its sodium salt forms insoluble precipitates with the salts of the alkaline earths and the metals. The acid is composed of $C_{28}H_{15}O_7+HO$. (See Cubebs, in this report.) Arch. Pharm., 1873, pp. 388–394.

Picric Acid.—A compound of *picric acid* and *anhydrous acetic acid* has been obtained by D. Tommasi and H. David, which may be regarded as a picrate in which one atom of metal is replaced by acetyl. It melts at 75° to 76° C. (= 167° to 168.8° F.), begins to decompose at 120° C. (= 248° F.), turns brown at 180° C. (= 356° F.), and is completely decomposed at 260° C. (= 500° F.), leaving a carbonaceous residue. By alkaline solutions in the cold it is split into acetic and picric acids. When mixed with chlorate of potassium it explodes with violence. Chem. News, Aug. 15th, 1873; Compt. Rend., July 21st, 1873.

Picric Acid: its Detection in Beer.—The property which woollen yarn possesses to completely extract picric acid from its solution, which was first used by Pohl as a means for the detection of that coloring matter, has been applied to its detection in beer. According to Dr. H. Brunner, the presence of the natural coloring matters in beer interfere, however, with its proper recognition, imparting to the yarn a dirty brown-yellow color. He therefore takes advantage of the solvent power of ammonia, which completely extracts the picric acid from the yarn. The solution is concentrated to a minimum, and a few drops of solution of cyanide of potassium is added, when, if the least trace of picric acid is present, a red color is produced, which is due to the formation of isopurpurate of ammonium. By this means the author has succeeded in determining a milligramme of picric acid in a pint of Bavarian beer. Ph. Centralhalle, 1873, No. 29, p. 248.

Methin-trisulfonic Acid has been obtained by O. Krause by heating nitro-formen-disulfonate of potassium with sulphite of potassium in a sealed tube to 180° C. (= 356° F.) for one day. Upon cooling, crystals of methin-trisulfonate of potassium and a supernatant liquid, holding in solution sulphate of potassium and ammonia, were found. From the methin-trisulfonate so obtained the acid may be obtained by converting it into a barium salt by chloride of barium, and decomposing the barium salt by sulphuric acid. Arch. Ph., July, 1873, p. 72.

Tannin.—A new method for the estimation of tannin has been proposed by A. Terreil; it is based upon the absorption of oxygen by tannin in the presence of alkali; and, from the quantity absorbed, which is determined by measuring it in a graduated cylinder, the tannin is readily calculated. The author found that 0.1 gramme of tannin absorbs 20 cubic centimetres of oxygen. The apparatus and manipulations are described in the Journal de Pharm. et de Chim., June, 1874, pp. 445–447. Although vegetables contain other principles which, like tannin, absorb oxygen, the author believes the process to be sufficiently accurate for technical purposes.

Tannin in Tea.—Mr. Alfred H. Allen gives the method pursued by him in estimating the tannin in tea, which he considers more accurate than the methods usually pursued, and has been found accurate with him to within one-half of one per cent. (See Tea, in this report.)

Pyrogallic Acid.—H. Struve has made comprehensive experiments upon the action of oxidizing agents upon pyrogallic acid. Solutions of pyrogallic acid are, upon the addition of alkalies, rapidly browned, with precipitation of an amorphous brown mass. The same result takes place upon the addition of oxides, peroxides, such as peroxide of manganese, peroxide of barium, oxide of copper, and permanganate of potassium, the reaction occurring, if anything, more rapidly. Peroxide of lead, however, reacts slowly, producing the same phenomena that are observed when various organic substances, such as gum, infusion of malt, grape-juice, blood, saliva, etc., are added; gum affording the readiest reaction. When pieces of gum are added to a solution of pyrogallic acid, it is soon observed that they become surrounded by a dark-brown zone. If the pyrogallic acid is, however, added to a 1 per cent. solution of gum, in the proportion 0.2 (gramme ?) to 50 c.c. of solution, the reaction is less energetic. The pyrogallic acid dissolves almost immediately, the solution becomes yellow, and gradually brown, and after several hours crystalline needles are deposited. These, being nearly insoluble in water, but of comparatively easy solubility in alcohol and chloroform, especially by the aid of heat, are readily purified, and then possess a handsome bronze color, while its solutions possess the property of becoming intensely blue upon the addition of dilute alkali (ammonia). If the crystals are not perfectly pure, however, a brown instead of blue color is produced. By further examination the author found this oxidation product to correspond completely with the oxidation product of pyrogallic acid obtained by Aimé Girard, in 1870, and which he named

Purpurogallin.—In addition to the properties of this substance, as described by Girard, Struve states that it possesses the property, in common with pyrogallic acid, to reduce alkaline solutions of copper. Dilute, as well as concentrated hydrochloric acid, has no action upon purpurogallin, even at a boiling temperature. Concentrated nitric acid, on the contrary, reacts with considerable energy, coloring it at first faint rose-red, which becomes more intense, passes to orange, and finally yellow. By the aid of heat the reaction is more rapid.

In addition to the oxidizing action of the abovementioned substances upon pyrogallic acid, the author tried the effect of ozonized volatile oils, and selecting oil of turpentine for this purpose, found it to produce the same decomposition, the purpurogallin formed being, however, dissolved by the oil of turpentine. While he has not succeeded in isolating it from its solution in oil of turpentine, its presence is readily determined in it by agitation with weak alkaline (ammoniacal) solution, when the latter assumes the characteristic blue color.

The observation of Schönbein, that pyrogallic acid and peroxide of hydrogen can exist together in the same solution without decomposition, is contradicted by Struve, who finds that peroxide of hydrogen loses its reaction on tincture of guaiac and infusion of malt, upon the slightest addition of the acid. N. Rep. Ph., 1873, No. 6, pp. 354–368.

ORGANIC BASES.

Alkaloids.—Nowak and Kratschmer have communicated to the "Wiener Akademie d. Wissenschaften" a paper on the peculiar color reactions produced by phosphoric acid upon many alkaloids, which, by some, are accompanied by characteristic odor reactions. The color reactions are in many instances the same as those produced by sulphuric acid, but are preferable because the colors are much more distinct. The odor reactions seem, for some alkaloids, to be of inestimable value. This is especially true of atropia, which is much more readily recognized by the reactions of phosphoric acid than by that of sulphuric; the reactions being distinct with even extremely small quantities, and may be produced on one and the same sample repeatedly with like intensity. Wien. Akad. Ber., 1873, Nos. xxix–xxx.

Morphia.—A very delicate test for the presence of morphia in solution is, according to Kalbruner, that which Kieffer recommended some years ago, and which consists of perchloride of iron and red prussiate of potassium. Kieffer originally recommended a solution of the mixed salts, which, however, for obvious reasons, does not keep well, and Kalbruner therefore recommends their employment in separate solutions as follows:

Solution No. 1. 30 grains crystallized perchloride of iron; 4 drachms distilled water.

Solution No. 2. 2 grains red prussiate of potassium; 4 drachms distilled water.

Solution No. 1 will keep very well when it is not exposed to direct sunlight; but No. 2 should be prepared as wanted, as it is changed in a very few days.

The test is applied by adding 5 to 6 drops of No. 1 to a small quantity of the suspected solution, and then 3 to 4 drops of No. 2. If the liquid contained

$\frac{1}{4000}$th of muriate of morphia, an intense deep blue color results immediately; if

$\frac{1}{7000}$th, the coloration is light blue; if

$\frac{1}{14000}$th, it is dark green-blue, changing, upon standing, to deep blue, and this dilution may be regarded as the proper limit of the reagent; for, when the dilution amounts to $\frac{1}{30000}$th to $\frac{1}{60000}$th, a greenish coloration is simply produced, which is not characteristic evidence of the presence of morphia.

The advantages of the reagent are in that, that neither heat nor the presence of a moderate amount of free acid interfere with the production of the blue color. This coloration is also not interfered with by the presence of gum, sugar, cherry laurel or cinnamon water, quinia, atropia, strychnia, alcohol, or glycerin. The presence of a large excess of alkali, however, destroys the reaction, by decomposing the perchloride of iron, and it is therefore best to render the solution slightly acid before adding the reagent.

Owing to the decomposing influence of direct sunlight, it is necessary to avoid its influence as completely as possible. If solutions of perchloride of iron and red prussiate of potassium are mixed, in the abovementioned proportions, with several drachms of water, a yellowish-brown liquid results, which will keep in the dark for twelve hours without change; if such a mixture is, however, exposed to the direct rays of the sun, deoxidation soon commences, the solution becomes dark-green, and in thirty minutes it is completely dark-blue. The author, finally, draws attention to some of the deoxidizing agents, which, by their presence, would cause similar color changes, but concludes that they are all readily distinguished by a single test. Zeitschr. Œst. Apoth. Ver., 1873, No. 27, p. 469.

Morphia.—A new test for morphia, more delicate than the tests hitherto known, has been discovered by Louis Siebold, which may be applied to the detection of morphia in food, the contents of stomachs, etc., from which the poison has been separated in the usual manner. The test is applied by heating the substance believed to be, or to contain, morphia, gently with a few drops of sulphuric acid, and adding a very small quantity of perchlorate of potassium, when the liquid immediately surrounding the perchlorate will at once assume a deep brown color, which will soon spread and extend over the greater part of the acid. Warming increases the delicacy of the test. 0.0001 gramme of morphia can be distinctly recognized in this way, and no other alkaloid is acted upon in a similar manner by the substances named. It is indispensable to the success of the experiment, however, that the perchlorate should be perfectly free from chlorate; if it is not, it must be heated with successive portions of pure hydrochloric acid until the latter remains colorless and ceases to give off chlorine. After removing the HCl completely by washing with water, the perchlorate must be dried at 212° F., and is then ready for use. Ph. Jour. Trans., October 18th, 1873, p. 309.

The author explains, that since writing the above subject, his attention was drawn to the new test proposed by Mr. R. Schneider for morphia, and that this test is equally delicate. One drop of pure sulphuric acid is placed on a porcelain slip, and a mixture of one part of morphia and six parts of sugar added; the mixture will at once assume a purplish-red color, which remains unaltered for some time. Codein and aconitin, however, if treated the same way, produce a similar reaction.

Detection of Morphia in the Presence of Quinia.—L. W. Jassoy proposes to agitate the supposed mixture with twenty times its weight of water and filter. If the quinia was present as sulphate, the greater portion of it will remain undissolved, while the morphia salts will be found in the filtrate, to which a few drops of iodic acid are added, and after agitation a little chloroform; the latter will dissolve the liberated iodine, or, in case morphia is not present, will remain colorless, while the filtrate becomes fluorescent.

In the presence of the more soluble muriate of quinia, the reaction is a little different. After proceeding as stated above, a yellow coloration will at once be produced if morphia be present; but the iodine will not be dissolved in the chloroform, unless an excess of morphia be contained in the mixture. The yellow color, however, produced by the formation of a compound, insoluble in chloroform, between the liberated iodine and the quinia, is sufficient to indicate the presence of morphia, or of a foreign body with a similar behavior towards iodic acid. Am. Jour. Pharm., from Arch. d. Pharm., June, 1874, p. 517.

Neutral Meconate of Morphia is, according to Messrs. T. and H. Smith, pre-eminently adapted for hypodermic injections, its solutions being quite stable. Pharm. Jour. Trans., Nov. 29th, 1873, p. 436.

Apomorphia from Morphia.—The method of Arppe for preparing from morphia—by evaporation with dil. sulphuric acid to dryness and heating to 150° C. (= 302° F.)—sulphomorphid, has been modified by Dr. G. Hadler, who heats morphia in a mixture of 2 volumes of sulphuric acid and 1 volume of water, until the temperature of 150° C. (= 302° F.) is reached. At that temperature the mixture becomes brown, and upon cooling deposits crystals, which possess all the properties of Arppe's sulphomorphid. The compound, so obtained, yielded, when precipitated with carbonate of sodium, and extracting the precipitate with ether, etc., a base, which, possessing all the properties of apomorphia, the author regards as identical with that base.

In connection with the sulphomorphid, the author draws attention to a reaction which he regards as very available for the detection of morphia and codeia, both of which very readily yield sulphomorphid, when treated with sulphuric acid. Solutions of the last-named compound, when treated with ammonia in excess, produce a precipitate which rapidly changes to red, and communicates this color to chloroform agitated with it. The latter is colored intensely rose-red, when 1 milligramme morphia is used, and with one-fourth milligramme the reaction is evidenced after standing some time. Ph. Centralhalle, 1873, No. 41, p. 346, from Schweiz. Wochensch. Ph.

The following reactions of apomorphia have been determined by Quehl and Koehler:

Sulphocyanide of potassium produces a white curdy precipitate, soluble by heat.

Ferrocyanide of potassium changes its solution to red, which then becomes opalescent, deposits fine flocks which separate more rapidly if heated, agglutinate, and turn green.

Ferridcyanide of potassium produces a curdy precipitate, which turns violet on heating.

Tannin produces a greenish-yellow precipitate, which does not dissolve on heating.

Chloride of gold forms a bulky purple precipitate.

Picric acid produces, even in a very dilute solution, a lemon-yellow precipitate, which is redissolved by heat.

Sulphate of copper produces bluish turbidity, which turns green on heating.

Iodide of potassium produces a blood-red precipitate, which disappears on heating.

Stannous chloride produces a white precipitate, which is redissolved by heat. Chem. News, Nov. 21st, 1873, from Bull. Soc. Chim., Oct. 5th, 1873.

Codeia.—The experience of Dr. C. R. A. Wright with the process of Matthiessen and Burnside for preparing apocodeia from codeia by the action of chloride of zinc, is in entire conflict with the results of D. Brown, who had obtained a product, possessing most of the properties of the hydrochloride of apocodeia. This product analyzed by the author, was found to be isomeric with hydrochloride of codeia. He found, furthermore, that at low temperatures the chief product is a loose compound of chloride of zinc with the hydrochloride of the base tricodeina, and, if a longer time of heating be adopted, or a higher temperature, tetracodeina is also formed. The author thinks that Matthiessen and Burnside's apocodeia was simply an alteration product, due to the action of hydrochloric acid on the tricodeina first formed. Chem. News, Nov. 28th, 1873, p. 278.

Hydrochloride of Narceina.—Dr. C. R. A. Wright, by his experiments, corroborates Petit's statement that in order to obtain normal hydrochloride of narceina it is necessary to employ a large excess of hydrochloric acid. With eight or ten equivalents of the latter the salt was obtained, apparently having the composition $C_{23}H_{29}NO_9, HCl, 2\frac{1}{2}H_2O$ ($O = 16$). When this was dissolved in fifty times its weight of boiling water fine filamentous crystals were formed at 35° C. (95° F.), having the composition $6\ (C_{23}H_{29}NO_9)\ HCl$ ($O = 16$). On thoroughly washing these with cold water they lost hydrochloric acid, leaving a body of Petit's formula, $10\ (C_{23}H_{29}NO_9)\ HCl$ ($O = 16$), but it is doubtful if this is a definite compound, as it still loses hydrochloric acid by repeated crystallization. The pertinacity with which chlorine adheres to narceina has rendered it hitherto impossible to obtain the alkaloid absolutely free from chlorine, and the author considers that this is due to the presence of a chlorine derivative, analogous to *chlorocodide*, but no evidence of such a body could be obtained, the action of strong hydrochloric acid on narceina, giving rise to a hydrochloride of a new base, having the formula $C_{23}H_{27}NO_8, HCl$ ($O = 16$). This base is amorphous, sparingly soluble in ether, and its salts yield a dark blue purple color with ferric chloride. Chem. News, Dec. 26th, 1873, p. 324.

Hydrocotarnina, one of the newly discovered opium alkaloids, has been furnished by its discoverer, O. Hesse, to Dr. F. A. Falck, who has made comprehensive toxicological experiments upon rabbits, and finds it to possess powerful toxic properties, producing intoxication, tetanic convulsions, and death. Compared with thebaina, codeia, and morphia, its effect as a poison is intermediate between that of codeia and morphia, thebaina being stronger than hydrocotarnina, and morphia weaker than hydrocotarnina. Experiments with frogs also made with hydrocotarnina prove that it can be administered in relatively much larger doses to them than to rabbits. The experiments were made subcutaneously. N. Rep. Ph., 1873, No. 6, pp. 321–342.

Alkaloids of Cinchona Barks.—The following method of separating the mixed alkaloids of cinchona barks is given by

Dr. J. E. De Vrij (Pharm. Jour. Trans., Sept. 27th, 1873, p. 241): 20 grammes of powdered and sifted bark, dried at 100° C. (=212° F.), are mixed with milk of lime, made of 5 grammes of dry-slaked lime and 50 grammes of water. The mixture is slowly dried; when entirely dry it is heated in a flask with 200 c.c. of the strongest possible spirit, till it boils; allowed to cool and subside, and decanted upon a filter of about 15 centimetres diameter. The residue is mixed with 100 c.c. of spirit; the mixture well shaken, and poured on the filter, and, when all the liquid has passed through, and the residue upon the filter is washed with 100 c.c. more of spirit, the united liquors are acidulated slightly with sulphuric acid. The sulphate of calcium formed is allowed to subside; the greater part of the liquid is poured off clear, and the rest is filtered; the greater part of the spirit is recovered by distillation, and the remainder of the liquid, together with the spirit and water necessary to wash out the still, is poured into a capsule, heated upon a water-bath till all the spirit has been expelled, and, upon cooling, is filtered. A mixture of quinovic acid and fatty matter remains upon the filter, which is washed with slightly acidulated water till caustic soda no longer produces a turbidity in the liquid. The filtrate is then reduced to a small volume on a water-bath, and while still warm precipitated by a slight excess of caustic soda. So precipitated (from warm solution) the alkaloids are less voluminous, and can, therefore, more easily be washed; the alkaloids from some barks, however, melt under these circumstances, in which event the mass is carefully powdered, after cooling, and collected upon a small filter. The mixed alkaloids are then washed carefully with the smallest possible amount of water, so that no quinia may be removed; the filter is pressed between filtering-paper until the precipitate can readily be removed completely from the filter, and then dried in a weighed capsule upon a water-bath till repeated weighings show that the weight remains constant. The observed weight multiplied by five gives the amount of mixed alkaloids in one hundred parts of bark.

Quinia.—A. C. Oudemans, Jr., has found two samples of quinia containing nine equivalents of water of hydration instead of three; but was unable to explain their formation. Chem. News, Nov. 28th, 1873, from Ber. d. Ch. Ges., Oct. 27th, 1873.

Muriate of Quinia.—Voltz draws attention to the advantages that this salt possesses over the sulphate so generally used, and recommends its substitution for the latter. While it requires 750 parts of cold water to dissolve 1 part of the sulphate, it requires but 60 parts to dissolve 1 part of the muriate. The difference in cost is fully compensated by the greater quinia-strength of the muriate, which contains but 3 equivalents of water, while the sulphate contains 7 equivalents. Arch. Ph., March, 1874, p. 282.

Meconate of Quinia.—Peter Townsend Austen has prepared a new salt of quinia, the meconate, and gives, in a preliminary notice, the following method of preparation and characteristics: If an alcoholic solution of meconic acid be added to an alcoholic solution of quinia, a white, curdy precipitate is formed, which is soluble in hot water, and deposited from such solution in beautiful crystals. The watery solution gives reactions for both quinia and meconic acid. The first curdy precipitate on drying forms a mass resembling glue, the next precipitate forms minute scales of a silken lustre; finally, small crystals are obtained. The author finds the composition of the salt most probably to be $C_7H_2\ (C_{20}H_{24}N_2O_2)\ O_7$ $(O = 16)$. Amer. Chemist, May, 1873; Am. Jour. Ph., 1873, p. 321.

Theina.—The following method of estimating theina in commercial tea is advocated by Mr. Alfred H. Allen as the best process when accuracy is desired: 200 grains of the powdered tea is subjected to displacement with hot commercial benzol, in an apparatus arranged for condensing the vapors and causing the liquid (condensed?) to flow repeatedly through the tea, as long as it acquires color, 2 ounces of benzol, used in this way, being sufficient for the extraction. When cold, the benzol solution is subjected to distillation, the residue is extracted by boiling water, the liquid is filtered, evaporated to dryness on a water-bath, and the residuary impure theina weighed. It is then purified by resolution in hot water, treatment with acetate of lead, filtering, treatment with sulphuretted hydrogen, again filtering, and evaporating to dryness. The result is pure theina. Ph. Jour. Trans., Oct. 25th, 1873, p. 334.

Solania.—The experiments of O. Bach with solania, prepared from potato sprouts, are in part corroborative of the experiments of others, and in part new. The author prepared it by precipitating the solution from the fresh sprouts by ammonia, dissolving the precipitate in alcohol, and crystallizing. In this he met with the difficulty, however, that but a small portion of the alkaloid crystallizes out, the by far greater portion forming a gelatinous mass, which renders the separation of the crystals from the mother liquor difficult. By redissolving the gelatinous alkaloid in dilute acid, reprecipitating the solution with ammonia, resolution of the precipitate in alcohol, and spontaneous evaporation at a uniform temperature, he succeeded in obtaining a larger quantity of crystals. This was repeated with the gelatinous solania, formed after every operation, until he had finally obtained it all in the form of crystals. He finds solania so obtained to form fine silky glistening needles; feebly bitter, and acrimonious; of alkaline reaction; nearly insoluble in water; very sparingly soluble in ether; sparingly soluble in cold, more soluble in boiling, alcohol. In moderately concentrated acids it is readily dissolved, forming salts which refused to crystallize and invariably formed gelatinous masses. By treatment with dilute acids, even below their boiling-point, it is very readily split into sugar and solanidia. The author finds the reaction of sulphuric acid and alcohol upon solania, mentioned by Helwig, to be very reliable. A trace of solania brought in contact with a warm mixture of equal volumes of sulphuric acid 1.84 and alcohol produces immediately a handsome red or cherry-red color, which remains for several hours, and this reaction is not interfered with by the presence of even considerable quantities of morphia. This is of importance in forensic determination, as the method heretofore pursued for distinguishing between the two, which is based upon the solubility of the solanidia produced by the action of concentrated muriatic acid in ether, can be entirely avoided. The muriate of morphia, formed under the same circumstances, as well as the unchanged alkaloids, solania and morphia, are, as is well known, insoluble in ether. Ph. Centralhalle, 1873, No. 40, p. 340.

Solania and Solanidia.—In a memoir presented to the Institute of Bologna, Professor François Salmi demonstrated that solania, in an acid solution, and at a temperature beyond 10° to 11° C. (= 50° to 51.8° F.), is in twenty-four hours decomposed partially into solanidia and other products. After remarking that this decomposition would nearly always take place in the viscera, he points out that, although toxicologists are acquainted with some characteristic reactions of solania, they are not yet acquainted with the means of recognizing solanidia. This has led the author to investigate the subject, and to publish in his memoir what he considers to be the most characteristic tests for the presence of solania and its derivative.

The principal reagents for solania are:

1. Brominated hydrobromic acid, which gives a violet coloration.
2. Dilute sulphuric acid reduces it by eremacausis, giving a violet coloration.
3. Nitric acid and an alkali give a pale yellow color.
4. Sulphuric acid and arsenic or phosphoric acid, added successively, give a red coloration.
5. Traces of chloride of platinum give a purple coloration.
6. Phosphoric acid and traces of molybdic acid give the same purple color.
7. Brominated hydrobromic acid gives rise to long acicular crystals if the combination be treated with water and evaporated to dryness.

Solanidia may be recognized by—

1. The special form of the crystals of its hydrochlorate.
2. The form of the crystals of its hydrobromate.

3. The bright yellow color which results from the action of nitric acid and a caustic alkali.

4. The red color caused by phosphoric acid and traces of molybdic acid.

5. By the orange-yellow color produced by brominated hydrobromic acid when the mixture is evaporated to dryness.

By operating with the care required in such experiments, quantities of either of these substances may be indubitably detected that would escape observation with any of the processes indicated in treatises on toxicological chemistry. Ph. Jour. Trans., Nov. 29th, 1873, p. 426; Annali di Chimico applicata alla Medicina.

Curarina.—According to Flückiger, curarina produces with oxidizing agents, in the presence of sulphuric acid, the same violet coloration as strychnia; although the purity of the shade is injured by a brown accompanying body. It may be distinguished, however, by preparing its chromate, which dissolves in sulphuric acid with an intense but transient blue, while the chromate of strychnia becomes violet. The chromate of curarina may be prepared by adding a saturated solution to extract of curare, preferably prepared with glycerin, when uncrystallized chromate of curarina precipitates. Chromate of strychnia is readily crystallizable. Chem. News, Nov. 21st, 1873, from Bull. Soc. Chim., Oct. 5th, 1873.

Physostigmia.—According to M. A. Petti, the alkaloid of the calabar bean, eserina or physostigmia, yields a blue coloring matter by saturating it accurately with dilute muriatic acid, adding an excess of solution of ammonia, and heating. The mixture becomes consecutively pale red, red, yellowish-red, yellow, green, and finally blue, when it is evaporated to dryness, and a magnificent blue substance remains. This is soluble in water and alcohol; forms elongated prismatic crystals, and will dye silk without the use of mordant. By the action of acids the new coloring matter is changed to a handsome purple-violet, and forms solutions which appear violet and transparent by transmitted light, but by reflected light, remarkably turbid and carmine red. Ph. Centralhalle, 1873, No. 31, p. 267.

Ditaïn.—G. Gruppe, of Manilla, has obtained from the bark of the dita tree (see Allstonia scholaris, R. Br.) an amorphous bitter substance, which he presumes to be an alkaloid (having obtained it by a process similar to that for quinia), and which is its active principle. As obtained it forms a coarse, green-black powder, which is quite deliquescent, and consequently freely soluble in water, sparingly soluble in dilute alcohol, and insoluble in absolute alcohol and ether. Its aqueous solution is of greenish-brown color and intensely bitter. W. Hildwein states that the alkaloid is by no means pure as obtained by Gruppe, and that it seems to be a mixture of crystallizable substances and coloring matter, and he promises to endeavor the isolation of the pure principle, as soon as larger supplies can be obtained. N. Rep. Ph., 1873, Nos. 8–9, pp. 561–563.

Anilin.—A new red coloring matter has, by M. F. Hamlet, been obtained from anilin. To 25–30 grm. anilin, contained in a flask, chloride of sulphur is added drop by drop, with continual agitation to prevent carbonization. In five to ten minutes after the mixture is completed, a red, resinous product is formed, which affords a splendid red solution in strong acetic acid. The filtered solution, when evaporated carefully to syrupy consistence, leaves a brilliant, nearly black substance, which is soluble in ether and alcohol, as well as in acetic acid, producing fuchsin red solutions. Arch. Pharm., July, 1873, p. 73; Les Mondes, 1873.

Fruit Syrups and Juices.—The presence of fuchsin in them is detected by C. Puscher, by immersing a silk or woollen thread in them, when, if fuchsin is present, the color communicated to the thread is permanent, while that communicated by the natural coloring matter is readily washed off. Ph. Centralhalle, 1873, No. 28, p. 237, from Polyt. Notizbl.

Rosanilin.—C. Liebermann had formerly shown that when rosanilin is heated to temperatures above 240° C. (= 464° F.) along with water, the atoms of nitrogen are successively eliminated as ammonia, and replaced with equivalent amounts of water. He has since succeeded in obtaining the product free from nitrogen. This product has nothing in common with rosolic or hydrorosolic acid. It crystallizes in colorless, lancet-shaped leaflets, fuses at 200° C. (= 392° F.), and dissolves in dilute alkalies without color. In water with sodium amalgam it dissolves with a transient red color, like that which the anthrachinons and other chinons display under similar reducing reactions. Chem. News, Aug. 22d, 1873; Ber. d. Chem. Ges., July 28th, 1873.

Oxethen Anilin has been obtained by E. Dernole, by allowing ethylen oxide to act upon an equivalent quantity of anilin in a sealed tube. The new base, for which the author gives the formula $C_8H_{11}NO$ ($O = 16$), is less mobile than anilin, colorless when recently prepared, sparingly soluble in water, alcohol, and ether, but readily in chloroform. The aqueous solution takes a green color with solution of hypochlorite ot calcium. Chem. News, Oct. 17th, 1873, from Ber. d. d. Ch. Ges., Sept. 3d, 1873.

Anilin Colors.—The method pursued up to this date, for determining the value of a coloring matter, consists in dyeing or printing with the different samples, and comparing the intensity of the shades produced. This method answers perfectly for industrial purposes, but not for proving their purity. A. Stamm has now devised a method by the use of hyposulphite of sodium, which he considers simple and precise in determining the strength and purity of these bodies chemically, and which is specially applicable to anilin colors. The apparatus employed is essentially the same as that employed by Schützenberger and Risler for the determination of oxygen in water. The hyposulphite is drawn up by aspiration into a Mohr's burette. The solution to be titrated is poured into a small flask closed with a caoutchouc stopper, pierced with three holes, through one of which passes the delivery tube of the burette, while the other two serve for admitting a current of carbonic acid, since the experiment must be made in the absence of atmospheric air. With the exception of magenta, which is readily decolorized in the cold, the decomposition is effected by keeping the contents of the flask at the boiling-point. If it is required, *e. g.*, to analyze a sample of magenta, 1 or 2 decigrammes of the sample is dissolved in a litre of water, and the amount of solution of hyposulphite required ascertained. It is then ascertained how much solution of hyposulphite is required to decolorize a solution of 1 or 2 decigrammes of pure magenta in a litre of water, when the ratio of the two numbers gives the value of the sample under examination. Chem. News, Aug. 29th, 1873; Bull. de la Soc. Chim., Aug. 5th, 1873.

New Anilin Color.—Cinnamon-brown, a new anilin color, which may be used on wool, silk, and cotton, and may be varied at pleasure, from a fine brown, by the addition of blue, red, or yellow dye-wares, is obtained by means of one of the products formed in the manufacture of magenta. It is an acid salt of chrysotoluidin, a base derived from toluidin by the elimination of hydrogen. The base is insoluble in water, and is separated from the solution of its salts by alkalies, in the form of a light-yellow precipitate. Its neutral salts are sparingly soluble in water, which splits them up into a basic insoluble salt and an acid soluble salt, the solution of the latter being yellowish-brown. The alcoholic solution of the free base is a pure yellow, and this shade is obtained on dyeing in a bath of the acid salt with an alkali. Chem. News, Dec. 26th, 1873, from Bull. Soc. Chim., Nov. 5th, 1873.

Anilin Greens.—MM. Lauth and Baubigny propose to replace the iodide of methyl, in the manufacture of certain anilin colors, by an ether, with a mineral acid, a sulphate, hydrochlorate, nitrate or phosphate, or by the sulpho-conjugated acids of the alcoholic radicals. The best results have been obtained with nitrate of methyl in presence of an alkali or an alkaline earth. The energetic action of this ether renders it practicable to operate at low temperatures, either in open or close vessels. Compt. Rend., June 16th, 1873; Chem. News, July 11th, 1873.

Chinons.—In the course of his experiments upon the various chinons, R. Fittig has discovered a peculiar color reaction of the chinon of mesitylen, which he proposes to apply as a substitute for litmus, curcuma, etc., as a reagent; the color reaction being decidedly more delicate and distinct.

Mesitylen-Chinon is readily formed by treating aqueous solution of hydrochlorate of diamidomesitylen with weak oxidizing agents (chloride of iron, very dilute solution of chromic acid), the chinon distilling over with the aqueous vapor. When pure it forms long, handsome red needles; melts at 101° to 102° C. (= 213.8° to 215.6° F.); is freely dissolved by alcohol and ether, and sparingly by water, forming yellow solutions. When brought in contact with alkalies, these solutions assume a violet-red color, which is quite permanent, but may be restored to the original color upon the addition of an acid. The reaction is best evidenced when a drop of its ethereal solution is added to any aqueous alkaline liquid. The ether becomes colorless, and the alkaline liquid assumes a deep violet-red color. The author supposes that the reaction is due to the formation of a compound with the base. Other chinons seem to possess the same property.

Tolu-Chinon, which the author obtained in small quantity from diamidotoluol, produces with bases a more red color.

Benzol-Chinon, is also extracted from its ethereal solution by aqueous alkaline liquids, and the solution assumes an intense brown-yellow color; but the reaction is not so sensitive as that of mesitylen-chinon, which evidences alkalinity even in ordinary spring-water. Ph. Centralhalle, 1874, No. 6, p. 41, from Chem. Cent. Bl.

GLUCOSIDES AND NEUTRAL PROXIMATE PRINCIPLES.

Quercitrin.—J. Löwe has found quercitrin to be contained in some varieties of sumach (Sicilian and Tyrolese), and obtained it by a process similar to that by which he obtained quercetin from catechu. Zeitschr. Anal. Ch., 1873, p. 128.

Quercetin is found to be contained in all samples of catechu examined by J. Löwe, who obtained it by agitating an aqueous extraction of catechu with ether, and evaporating the ethereal solution. The residue is purified by washing with boiling water, dissolving it in hot alcohol of 90 per cent., and adding boiling water, by which the quercetin is caused to crystallize in light-yellow needles. The aqueous solutions of catechu were prepared with cold water; and the author accounts for its presence in aqueous solution by suggesting that the catechu-tannic acid renders it soluble. Zeitschr. Anal. Ch., 1873, p. 127.

Digitalin, Digitin, and Digitaleïn.—Dr. Nicolai Goerz has prepared digitalin, digitin, and digitaleïn by the process of Nativelle, following the directions of the latter very accurately, and, while obtaining the substances as described, they were obtained in very much smaller quantities. From 3000 grammes digitalis leaves, Goerz obtained but 15 milligrammes of crystallized digitalin, while Nativelle obtained from the corresponding quantity 3 grammes; 4.27 grammes of digitin to Nativelle's 9 grammes; and 12.98 grammes of digitaleïn instead of 30 grammes. The author can only explain these differences by supposing the digitalis leaves used were inferior to those used by Nativelle, who personally collected the leaves before the flowering period of the plant, while those used by Goerz were purchased, but regarded of good quality, and collected either just before or early during the flowering.

Further experiments, both chemical and physiological, lead the author to the following conclusions:

1. The results of Nativelle have contributed very decidedly to our knowledge of digitalis, both in chemical and pharmacodynamic respects; but not so much on account of the discovery of the crystallizable *digitalin*, as by the preparation of *digitaleïn;* even if this is found to be identical with the *digitasolin* of Walz.

2. *Digitaleïn* and *digitin* are glucosides, and contain no nitrogen.

3. *Digitaleïn* possesses all the physiological properties that are at present attributed to the digitalis leaves; its preparation is simple, and attended with least expense; while its

ready solubility permits its rapid absorption, and its dose may be accurately graduated.

4. *Digitaleïn* produces precisely the same therapeutic effects that infusum fol. digitalis does. Ph. Zeitsch. Rus, 1873, Nos. 13–14.

The forensic detection of digitalin is, according to H. Brunner, best accomplished by decomposing it into glucose and digitalretin by the action of concentrated sulphuric acid, and then applying Pettenkofer's gall-test. The digitalin being isolated by the process of Stas-Otto, is treated with concentrated sulphuric acid, heated to about 70° C. (= 158° F.), and a dilute solution of inspissated gall is added, when a magnificent red color results. This reaction, it is true, is occasioned by all glucosides, but the physiological action, which has rendered the examination necessary, completely distinguishes it from the latter; while the alkaloids, which possess similar physiological action, fail to give the abovenamed reaction. Ph. Centralhalle, 1873, No. 26, p. 220.

Saponin.—The following properties and reactions are, by Dr. Hermann Kœhler, ascribed to saponin:

1. Saponin yields with water an opalescent solution, foaming like soap solution; it is insoluble in ether, but soluble in petroleum ether, benzin, chloroform, alcohol, and amylic alcohol.

2. Concentrated sulphuric acid yields with it a carmine red, faintly brownish solution, which becomes violet blue on the margin after about fifteen minutes.

3. The addition of bichromate of potassium changes this color to dirty green.

4. Saponin dissolves readily and completely in diluted and concentrated nitric acid with a yellow color.

5. The addition of bichromate of potassium to this solution produces no change.

6. On boiling saponin with concentrated phosphoric acid a characteristic odor or coloration is not produced.

7. Bichromate of potassium, added after the phosphoric acid produces no change.

8. Evaporated with muriatic acid, saponin yields a gray jelly; bichromate of potassium merely darkens the liquid.

9. Saponin gives with acetic acid, with difficulty, a colorless solution, in which no change is produced by bichromate of potassium.

10. Saponin, like other glucosides, is split by dilute acids.

11. Ammonia-water dissolves saponin in the cold, yielding a foaming solution, from which acetic acid reprecipitates saponin.

12. Caustic soda dissolves saponin, but the solution is less clear, and foams like soap solution. Acetic acid reprecipitates it.

13. Caustic potassa behaves precisely like ammonia and soda.

14. The carbonated alkalies have a similar behavior.

15. The bicarbonated alkalies have an analogous behavior.

16. Tincture of galls produces in solutions of saponin a whitish, flocculent turbidity, which disappears on boiling.

17. A similar whitish turbidity is produced with ferridcyanide and with sulphocyanide of potassium.

18. Ferrocyanide of potassium does not alter the solution of saponin.

19. Iodide of potassium,

20. Bichromate of potassium, and

21. Picric acid, produce no change in solution of saponin.

22. Hydrate of barium yields a white precipitate, which is insoluble on boiling, and cakes together.

23. Subacetate of lead causes a white, voluminous precipitate, which cakes on boiling.

24. Saponin separates mere traces of suboxide of copper from alkaline copper solution; pure sulphate of copper is not affected.

25. Acetate of zinc,

26. Ferric chloride, and

27. Arsenious acid, produce in solutions of saponin white precipitates, which do not disappear on boiling.

28. On boiling saponin with solution of nitrate of silver, the latter is slowly reduced.

29. Chloride of gold, and

30. Corrosive sublimate, give no reaction with saponin. A. J. Ph., Sept., 1873, p. 393, from N. Jahr. Ph., 1873.

Santonin.—S. Cannizzaro and F. Sestini have obtained a substance composed of $C_{15}H_{20}O_4$, to which they give the name

Santonic Acid.—It is colorless, sparingly soluble in cold, but more freely in hot, water, from which it is deposited on cooling in fine prismatic crystals. It is readily dissolved by ether, and still more soluble in alcohol, chloroform, and in glacial acetic acid ; melts at 161° to 163° C. (= 321° to 325.40° F.). It does not produce that fine red-violet coloration which characterizes *santonin* when treated with alcohol and caustic potassa. Its acid characters are very decided, and it decomposes warm solutions of carbonates with brisk effervescence. The authors have further studied the santonates of sodium and barium, and the behavior of the new acid with bromine and nascent hydrogen. Chem. News, Aug. 22d, 1873, from Gazetta Chimica Italiana, July 30th, 1873.

Pimpinellin.—By treating an alcoholic extract of pimpinella with water, dissolving the residue in alcohol, filtering, evaporating the alcoholic solution, treating the residue so obtained with ether to remove resin, again taking it up by warm alcohol and allowing the solution to evaporate spontaneously, Buchheim obtained a crystalline substance, which, when purified by repeated crystallization from alcohol, formed yellowish-white needles, were tasteless in their undissolved condition, insoluble in water, sparingly soluble in ether, and freely soluble in alcohol, communicating to its solutions intense acridity. The substance is named by the author *pimpinellin*, and is regarded by him closely allied to the *angelicin* of Buchner. It melts at 97° C. (= 206.6° F.), and begins to decompose above 150° C. (= 302 F.); produces with concentrated sulphuric acid an evanescent red color, and contains no nitrogen. Vierteljahrschr. Ph., 1873, No. 4, p. 520–522.

Frangulin has been the subject of investigation by A. Faust, who was unable to discern under the microscope the quadratic crystalline tables described by Casselmann, either in the specimens of frangulin prepared by him or in a specimen prepared by Casselmann. He also found that the two specimens melted at 226° and 225° C. (= 438.8° and 437° F.) respectively, instead of 249° C. (= 480.2° F.) as stated by Casselmann. The author obtained frangulin by digesting the bark of Rhamnus frangula for three days with 90 per cent. alcohol at 25° to 30° C. (= 77° to 86° F.), distilling the alcohol partially off, adding acetate of lead as long as a precipitate is formed, filtering off the precipitate, precipitating filtrate with subacetate of lead, suspending the precipitate in alcohol, and decomposing by sulphuretted hydrogen; the resulting liquid yielded crystals of frangulin in cooling after filtration boiling hot. It forms a yellow crystalline mass after recrystallization from hot alcohol, is soluble in alkaline solutions with a deep cherry-red color, and when boiled with hydrochloric acid splits up into glucose and

Frangulic Acid.—This is, however, more conveniently prepared from the bark direct. The bark is boiled several hours in rain-water; caustic soda, equal to one-twentieth or one-thirtieth of the bark, is then added, and the boiling continued several hours more, and the decoction is strained. The resulting liquid is supersaturated with hydrochloric acid, and boiled for some hours, whereupon the frangulic acid separates, and is collected upon a filter. The impure frangulic acid so obtained is purified by drying and pulverizing, boiling in alcohol, precipitating the hot solution with acetate of lead, filtering hot, precipitating hot filtrate with subacetate of lead, suspending precipitate in alcohol, and decomposing by HS. The resulting liquid is heated to boiling and filtered hot, the acid then separating on cooling. This treatment with lead salts, etc., is repeated several times, and the purified acid, after being dried and boiled several times with benzin to separate sulphur, is finally recrystallized several times from hot alcohol. The yield is variable with different samples of bark; in one case 50 pounds yielded only a few grains. So obtained, the acid is but sparingly soluble in hot water, insoluble in cold water, soluble in alkaline solutions with a red color, and melts at 252° to 254° C. (=485.6° to 489.2° F.). Ph. Jour.

Trans., June 28th, 1873, p. 1033, from An. Chem. Ph., in Jour. Chem. Soc.

Artificial Vanillin has been prepared by Tiemann and Haarmann from coniferin, by heating its aqueous solution with a mixture of bichromate of potassium and sulphuric acid in a flask connected with a back-flowing cooler. After cooling, a little resin is separated by filtration, and the liquid is agitated with ether; on evaporation a yellow oil is left, which crystallizes in a few days. After treatment with animal charcoal and recrystallization from water, beautiful crystals, with the odor and taste of vanilla, are obtained, which fuse at about 80° C. (176° F.), are readily soluble in ether and alcohol, sparingly soluble in cold, more readily in hot water. Analysis gave results agreeing with the formula $C_8H_8O_3$. Carefully heated it sublimes without decomposition; it has a strong acid reaction, and gives with bases well-characterized salts. Am. Jour. Ph., from Pharm. Zeitung, 1874, No. 41.

COLORING MATTERS.

Alizarin has been found, by Eugen Schaal, to be a far more sensitive indication than litmus for titrating acids or alkalies, as it shows distinctly $\frac{1}{300000}$ of alkali, whilst a neutral solution of alizarin, strongly diluted, is colored yellow by 0.0007 of hydrochloric acid. The author prepares his solution of alizarin by dissolving it in boiling potassa lye with a drop of carbolic acid, and filtering in the cold. The neutralization of acidity is indicated by a change from yellow to rose color. Chem. News, Nov. 28th, 1873, from Ber. d. Chem. Ges., Oct. 27th, 1873.

Safranin.—This new red coloring matter is, according to R. Böttger, subject to remarkable chromatic changes when a few particles are treated as follows: The coloring matter is placed in a porcelain capsule, two drops of concentrated sulphuric acid are added, and the mixture is stirred with a glass rod; a magnificent blue color immediately results; if 1 to 2 drops of water are now added, the color is changed to a brilliant emerald-green; by continued and alternate additions of sulphuric acid and water, nearly all the colors of the spectrum may be produced. Ph. Centralhalle, 1873, No. 43, p. 361.

PROTEIN COMPOUNDS.

Pure Albumen.—Graham's statement that by dialysis for three or four days an albumen may be obtained, which, on incineration, leaves no trace of ashes, has been examined by B. Aronstein, and found to be correct. It is necessary, however, to use very fine parchment-paper made by De la Rue, of London, no German parchment-paper giving satisfactory results. The author's conclusions are as follows:

1. Pure albumen is completely soluble in water; its solution in the animal liquids is not affected by either the soluble or insoluble salts.

2. Pure albumen is neither coagulated by heat, nor by alcohol; in both cases coagulation depends upon the presence of salts in its natural solutions.

3. The insoluble salts, dissolved in the animal liquids, form no compound with albumen; their solution in the blood-serum as well as in the whites of eggs, is effected by an organic body which does not belong to the albuminous compounds.

4. The two liquids mentioned contain, besides albumen, paraglobulin, which albuminous body is insoluble in water, but here dissolved by the salts.

5. Pure serum albumen is precipitated by ether, but not pure egg albumen; in the presence of salts the action of ether is reversed. Amer. Jour. Pharm., from Zeitschr. f. Anal. Chem., 1874, p. 71; Archiv. f. Physiol., viii, p. 75.

MM. Mathien and Urbain have made the remarkable observation, that when the gases dissolved in the serum of blood are completely extracted, there is obtained an albuminous liquid which does not coagulate even at a temperature of 100° C. (= 212° F.). They repeated the experiment with albumen of egg, and found that the mercury pneumatic machine extracts not only the gases of albumen, but also the volatile salts. The authors show—(1.) That carbonic acid is the agent of coagulation of albumen by heat, and (2.) That albumen deprived of its volatile salts is transformed into globulin. Chem. News, Nov. 7th, 1873, from Compt. Rend., Sept. 29th, 1873.

Among the methods proposed for the quantitative determination of albumen, that in which precipitation by alcohol is effected, is the only one to which general objection may not be made. L. Girgensohn, however, suggests a method, which, he states, is superior to any that have been yet proposed. The liquid containing albumen is mixed with one-half its volume of a 20 per cent. solution of common salt, is then completely precipitated with solution of tannic acid; the precipitate is collected upon a weighed filter, is washed with distilled water until all the salt is removed, and is then treated with boiling alcohol, until the alcoholic filtrate no longer indicates the presence of tannic acid. The filter with its residue is dried, and when weighed indicates the quantity of albumen contained in the liquid under examination.

Iodated Albumen, used by Prof. Boldeau in the hospital of Beaujon with very satisfactory results, is prepared as follows: A solution of albumen is continually agitated with iodine in very fine powder, or dissolved in a suitable vehicle; the liquid assumes at first a deep brownish-black color, which disappears after several hours, and starch is then not colored blue by it. The solution is now evaporated to dryness at a low temperature, and made into pills, each containing 5 milligrammes ($\frac{1}{13}$ grain) of iodine, of which five or six may be taken in twenty-four hours. Amer. Jour. Pharm., from L'Union Pharm., April, 1874, p. 97.

Blood.—Sonnenschein finding that defibrinated blood, when treated with tungstate of soda, forms a red-brown precipitate, which becomes clotty on boiling, proposes this salt as a reagent for the detection of blood-stains. To detect blood-spots by this means on clothing, etc., the suspected portion is cut off, and, after having been treated with distilled water, the filtered solution is precipitated with the above reagent. The precipitate, washed and treated with ammonia, takes a reddish-green coloration. If phosphoric acid is present it must be carefully washed away before treating the precipitate with ammonia. Chem. News, Dec. 26th, 1873, from Bull. Soc. Chim., Nov. 5th, 1873.

Gelatin. — F. Henze suggests the following method to obtain very handsome gelatin from the feet of neat cattle. The feet, deprived of the hoof and larger bones, are digested with steam under a pressure of about three atmospheres, the accumulating liquid being drawn off from hour to hour, when in three hours they will be completely exhausted. The neats' foot oil is allowed to separate, removed, and the residual liquid treated with a mixture of 1 part of fresh wood charcoal and one-quarter part of animal charcoal, and is allowed to stand over night. Next morning the liquid is heated to 20° to 25° C. (= 68° to 77° F.), strained, and evaporated to the proper consistence for drying. Gelatin so prepared is, even in thick layers, of a light-wine yellow color, and possesses all the properties of a good glue, being highly elastic and tenacious. As it has neither odor nor taste it may readily be used for all the purposes for which gelatin is usually employed, if it is prepared from clean material. Amer. Jour. Pharm., 1873, p. 369, from Polyt. Jour.

Milk.—The difficulty experienced in making a complete extraction of the fat which exists in milk, and which appears to arise partly from the presence of water, while the fat is exposed to the action of ether, is overcome by J. Alfred Wanklyn as follows: A thin platinum dish, capable of holding about 50 c.c., is employed, and in it the portion of milk (5–10 c.c. accurately measured) is evaporated to dryness. The dish, during this evaporation, is heated in a water-bath, which consists simply of a beaker half filled with water, which is boiled over a lamp. The milk, as it is being evaporated, may be stirred up with a small glass rod, or small platinum spatula. The milk residue having been obtained in a state of tolerable dryness, it is covered with 20 to 30 c.c. of ether, and a *small* *inverted funnel* is fitted moderately tight into the platinum dish, which is thereby converted into a flask. The further details are obvious. By the adoption of this apparatus the determination of the fat in milk becomes perfectly easy. Chem. News, Jan. 2d, 1874, p. 3.

According to Prof. Sacc the lacto-densimetre should be discarded for determining the purity of milk. He proposes instead the addition of an equal volume of alcohol of 70° Tralles (sp. gr. 0.88), which when mixed produces a coagulum upon the surface, amounting to one-half of the entire volume, if the milk is pure. If water has been added the coagulum does not rise to the surface, remaining suspended throughout the liquid. Ph. Centralhalle, 1874, No. 13, p. 102; Polyt. Notizbl.

L. Merklen has operated by the process recommended by Prof. Sacc, and finds it unreliable when carried out by the simple directions of the author. Special manipulation, not given by Prof. Sacc, may, perhaps, be necessary to render the method available. Ibid., No. 17, p. 129.

FERMENTS.

Diastase.—The distribution of diastase in malt is by no means homogeneous throughout the malt grains, but has, by Anton Urban, been determined to be contained chiefly in the cellular tissue immediately beneath the epidermis, and that therefore the bran contains the largest relative proportion. The author's experiments consisted in sifting six several portions, by sieves of different fineness, from a weighed quantity of ground malt, subjecting these several portions to the mashing process, and comparing individual results with each other, and the combined result with that obtained by mashing a like portion of normal coarse-ground malt. The result proved that with the coarser fractions the yield of sugar and extractive was greater than with the finer fractions; and that the fractional portions together yielded about 13 per cent. less of extractive and sugar than did the same quantity of malt, subjected to the mashing process, at one operation. This proves that the diastase is unequally distributed, and that the excess contained in one portion of the malt grain serves to convert into glucose the excess of starch in another. Arch. Ph., Sept., 1873, p. 252, from Der Bairische Bierbrauer.

Yeast.—Jeverson and Boldt, of Copenhagen, have patented a process by which ordinary beer yeast is obtained in the form of a dry powder, and if packed in air-tight cans will retain its properties unchanged for several months. The process consists in first washing the yeast thoroughly with cold water, then submitting it to the action of a centrifugal machine, and, when as dry as it is obtainable in this way, it is introduced into an apparatus, in which a partial vacuum is attainable, along with chloride of calcium. By very moderate heating the remaining water is vaporized, and coming in contact with chloride of calcium it is by it absorbed. Finally, the yeast is subjected to a current of dry air or carbonic acid, and is then obtained in the form of a very dry powder. When used it is mixed with water at a temperature of 20° to 30° C. (= 68° to 86° F.) to form a thin pasty mass. N. Jahr. Pharm., 1873, p. 244, from Bierbr.

Pepsin.—Mr. Charles Symes has conducted a series of experiments with a view, 1. Of ascertaining the quality of specimens of commercial pepsin by different makers; 2. Of testing the various processes which have been proposed for its preparation as a medicinal or restorative agent. The author, among his numerous experiments, instances the following, in which he used a minimum quantity of acid, however, so as to test the full peptic power of the various samples, five of which were dry samples, while the sixth was a wine, representing ostensibly, 2½ grains pepsina porci in a drachm. In each instance 100 grains of the white portion of hard-boiled eggs, finely chopped, were subjected to the action of 10 grains of each of the dry samples, suspended in 10 drachms of water, acidulated with 10 minims of hydrochloric acid; while in the instance of the wine, 4 drachms of it were substituted for 4 drachms of water. The following was the result, No. 6 being that with the wine:

No. 1 left undissolved,	1½ grain.
" 2 " "	2½ grains.
" 3 " "	24 "
" 4 " "	28 "
" 5 " "	41 "
" 6 " "	56 "

The various samples had all been exposed under the same conditions, at a temperature of 100° F. for twelve hours, and the experiments were several times repeated, both with portions of the same samples, and with samples of the same makers, but obtained from different sources, and while the results varied slightly, they bore the same relation to each other.

After reviewing the process of Bruke, which has probably been longest in use, but which is liable to injure the product; and the process of Dr. Beale, which is somewhat primitive in its character, consists in expressing the contents of the glands of the mucous membrane by the knife, and spreading the juice so obtained upon glass plates to dry, and which in the hands of the author did not prove as satisfactory as he had anticipated; the author reviews the process of E. Scheffer, regarding it as the most satisfactory as regards uniformity of excellence and economy in working, of any he had tried. By this process, pepsin can be made to answer strictly to the tests given; it keeps well; is soluble in an acidulated fluid, and hence might be prescribed in solutions of almost any strength. Among other experiments, the author performed one with a given weight of moist mucous membrane, scraped from fresh cleansed pigs' stomachs, which was divided into three portions, one of which was retained moist, another dried in a thin layer at a temperature not exceeding 100° F.; from a third portion pure pepsin was separated by Mr. Scheffer's process, and brought to the weight of the portion, simply dried by the addition of sugar of milk. Parallel experiments to those abovementioned were conducted with the three portions so obtained, using 10 grains of each of the dry samples, and 80 grains (corresponding to 10 grains dry) of the moist sample. The following is the result:

No. 1 dried mucus left undissolved	31 grains.
" 2 moist " " "	22 "
" 3 saccharated " "	12 "

The samples were exposed as before, at a temperature of 100° F. for twelve hours. A fourth experiment was made with 10 grains of the saccharated pepsin, in which 4 drachms of water was substituted by 4 drachms of wine. At the expiration of twelve hours, and under the same conditions as the others, 52 grains of white of egg were left undissolved. These experiments abundantly prove the truth of the statement, that wine partially destroys the activity of pepsin. The author proposes an elixir, made by dissolving pepsin in raspberry vinegar, which he states is palatable and keeps well. Ph. Jour. Trans., July 5th, 1873, p. 1.

Pancreatin.—Mr. R. V. Mattison suggests the following formula for the preparation of a saccharated pancreatin, which he states will readily emulsify cod-liver oil:

The pancreas are dissected and macerated in water, acidulated with hydrochloric acid, for about forty-eight hours, then separated, and the acidulated solution of pancreatin passed through a pulp filter until it is perfectly clear. To this clear solution is then added a saturated solution of chloride of sodium, and allowed to stand until the pancreatin is separated. This is carefully skimmed off and placed upon a muslin filter and allowed to drain, after which it should be washed with a less concentrated solution of chloride of sodium, and then put under the press. When the mass is nearly dry, it is rubbed with a quantity of sugar of milk, and dried thoroughly without heat, after which it is diluted until 10 grains emulsify two drachms of cod-liver oil. Am. Jour. Ph., Dec., 1873, p. 532.

Ptyalin.—Mr. Albert G. Brown has prepared a saccharated ptyalin from the parotid (salivary) gland of the pig, in the same manner that saccharated pepsin is prepared from the stomach of the pig. The author states that the saccharated preparation will readily emulsify cod-liver oil, and, like pancreatin, convert starch into glucose. The author's experience places it among the useful adjuncts to pepsin and pancreatin, and he prepares from it elixirs, etc., in the same manner as elixir of pepsin and elixir of pancreatin. He also found that it seems to have the property of dissolving coagulated albumen. Am. Jour. Ph., April, 1874, pp. 186–187.

Vaccine Virus which had been preserved in gypsum (according to the method of Ferrer), and another sample which had been preserved by wrapping in tin-foil and paper, was found by Dr. E. H. Müller, to be unsatisfactory in its action, when used immediately after mixing it with water or glycerin; but when it was allowed to macerate for eight days in glycerin, very satisfactory results were obtained. The author has also observed that glycerin affords an excellent preservative for the virus, and suggests that fresh virus be immersed in glycerin, believing that it will then keep for several years. Arch. Ph., June, 1873, p. 563, from Ber. Klin. Wochenschr.

URINARY AND BILIARY COMPOUNDS.

Urine.—A new constituent of urine has been isolated by F. Baumstark. The substance in question was found first in the urine of a dog, fed with benzoic acid, then in icteric, and finally in normal human urine. Its composition corresponds to the formula $C_3H_8N_2O$ ($O = 16$). It crystallizes in white columns like hippuric acid; melts at 250° C. (= 482° F.), and if heated on platinum-foil gives off dense white vapors of a peculiar odor. It is readily soluble in hot water, sparingly in cold water, insoluble in absolute alcohol and ether, and forms soluble salts with acids. If heated in a narrow tube it yields a combustible gas, which turns litmus blue, and smells of ethylamin. Chem. News, Aug. 22d, 1873, p. 97; Ber. Deutsch. Ch. Gesel., July 28th, 1873.

Silver Urea.—E. Mulder has formed a compound of urea and silver, by precipitating with soda a mixed solution of nitrate of silver and urea. It is a light yellow, gelatinous substance, insoluble in water, and its composition corresponds to the formula CO.2NHAg (O = 16). It does not explode when heated as does silver carbondiimid. Chem. News, Oct. 17th, 1873, from Ber. d. d. Ch. Ges., Sept. 3d, 1873.

Human Bile has been examined by Oscar Jacobsen with the following results: The bile appeared as a clear greenish-brown, yellow, and perfectly neutral liquid, of sp. gr. 1.0105 to 1.0107 at 17.5° C. (= 63.5° F.), and contained 2.24 to 2.28 per cent of solid matter. Albuminoid matter and leucin were found in the bile only in the first days, while grape-sugar and urea were not present. Of the better known bile pigments, bilirubin and biliverdin were found. The mineral constituents of the dried bile were KCl 1 276 per cent., NaCl 24 508, CO_3Na_2 4.18, PO_4Na_3 5.984 $(PO_4)_2Ca_3$ 1.672 (O = 16 in formulæ). Total 37.620 per cent. of the dried bile. Besides these very small quantities of iron, silicic acid, and magnesia, were found. The organic constituents, besides those above mentioned, were: cholesterin, unsaponified fats, lecithen, glycocholate, palmitate, and stearate of sodium, and probably also cholin, as on prolonged boiling of the bile with hydrate of baryta, trimethylamin was invariably obtained. Chem. News, Oct. 17th, 1874, from Ber. d. d. Chem. Ges., Sept. 3d, 1873.

NECROLOGY.

AGASSIZ, LOUIS JEAN RUDOLPH, the eminent naturalist, died at Boston on the 14th of December, 1873, aged 66 years.

ASPINWALL, JAMES S., a member of this Association since 1855, and formerly its treasurer, died April 23d, 1874, aged 67 years.

BREITHAUPT, DR., one of the most eminent mineralogists of Europe, and for many years Professor at the Academy of Freiberg, died in that city on the 22d of September, 1873, aged 82 years.

CALVERT, F. CRACE, for twenty-five years Honorary Professor of Chemistry in the Royal Institution of Manchester, and well known in this country for his indefatigable chemical researches and numerous discoveries, died on the 24th of October, 1873, aged 54 years.

DEANE, HENRY, an honorary member of this Association, and a prominent member of the Pharmaceutical Society of Great Britain and other learned societies, died suddenly at Dover, England, on the 4th of April, 1874, aged 67 years.

DURAND, ELIAS, the eminent pharmacist and botanist, died in Philadelphia on the 14th of August, 1873, aged 80 years.

ELLIS, CHARLES, for many years President of the Philadelphia College of Pharmacy, and an ex-president of this Association, died in Philadelphia, May, 1874, aged 74 years.

FRAUENFELD, GEORG RITTER VON, an honorary member of the General Austrian Apothecaries' Association, and many other scientific associations, died, October 8th, 1873, aged 68 years.

GIRTLER, DR. GOTTFRIED, a prominent apothecary of Vienna, died on the 10th of September, 1873, aged 73 years.

HOWELL, DAVID, a promient pharmaceutic chemist of Carmarthen, England, died on the 19th of February, 1874, aged 45 years.

LABRES, KARL, apothecary of Eisenberg, Styria, died October 8th, 1873, aged 27 years.

McKENZIE, THOMAS G., one of the oldest pharmacists of Baltimore, died May 6th, 1873, aged 71 years.

MEGGESON, GEORGE, a member of the Pharmaceutical Society of Great Britain, died at Gunnersburg, England, on the 21st of February, 1874, at an advanced age.

MILBURN, J. PARKER, a prominent pharmacist of Washington, and member of the Columbia Pharmaceutical Association, and of the National College of Pharmacy, died on the 4th of March, 1874, aged 39 years.

MORSON, THOMAS NEWBORN ROBERT, prominently connected with the Pharmaceutical Society of Great Britain, and for many years actively engaged in the manufacture of chemicals, died on the 3d of March, 1874, aged 75 years.

NAUMAN, PROF. CARL FRIEDRICH, the celebrated mineralogist and geognosist, for many years Professor of Mineralogy at the University of Leipzig, died at Dresden, Saxony, on the 26th of November, 1873, aged 77 years.

LEA, JOHN WHEELEY, a member of the Pharmaceutical Society of Great Britain, died at Worcester, England, on the 23d of March, 1874, aged 83 years. The deceased was formerly a member of the well-known firm of Lea & Perrens.

LISTER, EDWARD, a chemist and druggist of Cowbridge, England, died on the 14th of April, 1874, at the advanced age of 75 years.

PROCTER, PROF. WILLIAM, JR., died February 10th, 1874, of heart disease. What Prof. Procter was to us will doubtless be more fitly stated in another portion of these Proceedings.

RITTER, BRADFORD, a graduate of the Philadelphia College of Pharmacy, formerly a druggist of Philadelphia, but latterly engaged in the manufacture of chemicals, died suddenly on the 11th of August, 1873.

ROSE, GUSTAV, the eminent mineralogist and chemist, died in Berlin, Prussia, on the 15th of July, 1873, aged 76 years. The deceased was one of three brothers, all of whom attained eminence in the world of science. He was author of numerous works, among which his report on the mineralogical and geological observations, made during a journey with Humboldt and Ehrenberg, in 1829, to the Ural and Altai Mountains and to the Caspian Sea, has made him specially prominent.

SUIRE FRANCIS E., a prominent pharmacist of Cincinnati, died in that city on the 13th of April, 1874.

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REPORTS OF COMMITTEES.

REPORT OF COMMITTEE ON ADULTERATIONS AND SOPHISTICATIONS.

The following report, on comparing it with the one of last year, will be found to be much smaller and apparently defective by ignoring many important drugs. The reasons for this are mainly the following: In the first place the previous report comprised all facts which were accessible to the committee, extending over the period from September, 1871, to September, 1873, while the present one embraces only the experience of one year. Second, it was thought to be sufficient to state that, as far as is known, many of the statements made in the last report still hold true, and therefore make a repetition unnecessary. Finally, it turned out that the committee had to confine itself to whatever information could be gleaned from published papers and a few stray items of personal observation; for, although the chairman of the committee had invited communications and contributions by sending out circulars all over the country, he is grieved to say that, outside of the committee, he has received only *one* contribution. If the Association desires to obtain merely a report of such facts as have been published, it would be much preferable to appoint one man, who might be called "reporter on adulterations." But, it is believed, the Association desires more than this. It should be its aim to stand guard over the quality of all substances relating to pharmacy, and to seek out and to denounce all frauds. To do this properly, a committee should not only gather all information obtainable from others, but should especially direct their attention to some prominent staple articles, obtaining samples at various places, and carefully examining or analyzing them. This suggestion has already been made by your committee last year, but the drawbacks connected with it were not then mentioned. We could undoubtedly have obtained all the samples we required by asking for them over our signatures, but those are not the kind we would wish. To represent the actual state of the market they should be purchased anonymously by a confidential and discreet agent, appointed for a certain district, say one for each State, who might send the samples to the committee. The want of acquaintance with members living at a distance and the expense of procuring such samples will generally be found to be a serious drawback. The plan mentioned here is doubtless capable of much improvement, but, if carried out, would in course of time develop a central bureau for the detection of adulterations, with a museum and all facilities for carrying out experiments, and furnishing in a great measure to the whole country a portion of the benefits which England derives from its "Adulteration Act."

The report is divided under three heads.

1. Crude Drugs and Commercial Products.
2. Chemicals and Pharmaceutical Preparations.
3. Miscellaneous Substances.

I. CRUDE DRUGS AND COMMERCIAL PRODUCTS.

Angustura Bark.—Prof. Maisch describes a new "false Angustura bark," which reached Philadelphia probably from New York, in Am. Jour. Pharm., 1874, p. 50.

Arnica Root.—Mr. E. M. Holmes found in one package only 50 per cent of the real root, and in another only about 1 per cent. The root had reached England from Germany. The chief adulterant was the root of Geum urbanum (avens, herb Bennet), besides roots from species of vaccinium and others.

Mr. D. Hanbury had met with parcels containing no true arnica root at all. Pharm. Journ. and Trans., April, 1874, pp. 810–811.

Balsam of Fir.—Under the name "Oregon Balsam of Fir" an oleoresin has during the last year appeared in commerce, which Prof. Maisch could not trace beyond New York. It is a thick, transparent, bright-brown liquid, of terebinthinate and aromatic odor. On rubbing it between the fingers, different odors become apparent, like that of nutmegs. It is probably a solution of resin in oil of turpentine, flavored with oil of Eucalyptus globulus and some essential oil of nutmegs. Am. Journ. Pharm., 1874, p. 106.

Balsam of Peru.—H. Schweikert has met with some balsam of Peru adulterated with storax. With the exception of the specific gravity, which was only 1.12, there was nothing to suggest adulteration, as it yielded, like the pure balsam, a hard resin with strong sulphuric acid, and developed no foreign odor on being warmed. Distilled with solution of sodic chloride, little alcohol was found in the distillate, but oily drops, which smelled strongly of storax. The author suggests, to detect such an adulteration, to employ petroleum benzin, which yields a clear solution with balsam of Peru, but a turbid mixture with an alcoholic solution of storax. Arch. Pharm., July, 1873, p. 53; Pharm. Centralh., 1873, No. 33.

Belladonna Root.—Mr. E. M. Holmes met with packages imported from Germany, containing some 50 per cent. of malvaceous roots, perhaps Malva sylvestris. Pharm. Journ. and Trans., April, 1874, p. 811.

Cascarilla.—The same authority reports a spurious cascarilla imported from Nassau, Bahama Islands, which he is inclined to believe may be derived from Croton lucidum, L. Ibid., p. 810.

Carrageen.—J. Dalmon has observed for some time in French commerce, the admixture of Gigartina acicularis, Lam., to Irish moss, as much as 40 per cent. It is distinguished from the latter by its cylindrical, cartilaginous, subdichotomous, flexuous fronds, with acuminate mostly bifurcated branches, sending out lateral horizontal spiniform branchlets. The conceptacles are spherical, sessile, and thin. Pharm. Journ. and Trans., Jan., 1874, p. 616; Rép. de Pharm., 1874, p. 696.

Dandelion.—Mr. Ch. B. Allaire, of Peoria, Illinois, again calls attention to the great quantities of spurious, so-called "American dandelion," floating about. It is merely chicory. Every manufacturer of fluid extracts, has ext. fl. taraxaci on his list, but none has apparently any ext. fl. cichorii. Chic. Pharm., 1874, p. 15.

Ginger.—Mr. Thomas Garside examined some samples of "bleached ginger," and found that they might with more propriety, be called "whitewashed." Five samples from different shops yielded an easily detachable powder, amounting to 2.33 per cent. of the original weight; three of these samples had been whitewashed, and two had been in addition, dusted with plaster of Paris. [Brande has years ago pointed out the same fact.] Pharm. Journ. and Trans., April, 1874, p. 831.

Guaiac Resin.—As found in commerce it is often very impure, through carelessness in preparation and making up. Mr. J. B. Barnes found in some samples 14.4 per cent., and 11.7 per cent. impurities. Pharm. Journ. and Trans., Nov., 1873, p. 369.

Lycopodium.—The pollen of the pine has been substituted for the spores of Lycopodium clavatum. It is brighter yellow, of lesser mobility and fineness; very inflammable. The pollen was probably shaken out at the time of fecundation from the male strobiles of Pinus sylvestris. Reported by P. Cazeneuve, in Rép. de Pharm., 1873, p. 630 (where woodcuts showing difference between pine-pollen and lycopodium may be found).

OILS.

Linseed Oil, used for manufacturing printers' ink, has been found adulterated with cod-liver oil, previously made almost odorless. Pharm. Centralh., 1873, No. 40. See also below, under "Fish oil."

Oil of Cajuput.—Ed. Histod, of Bristol, examined six samples of this oil for copper, which has been stated by some to be a common impurity, while others had asserted the contrary. All samples were found contaminated with copper. On rectifying them, they were obtained colorless, but resumed their green color on being left in contact with copper-foil. Oil of cajuput behaves in this respect like some other oils; when freshly distilled from the plants, it is colored (green), on rectifying, however, it comes over colorless; oil of thyme, when distilled from the plant, is deep-brown; when rectified, colorless. Arch. Pharm., Feb., 1873, p. 161; from Pharm. Journ. and Trans.

Oil of Mustard.—Dr. Hager met with a sample of this oil which was heavier than water, probably adulterated with oil of wintergreen; its alcoholic solution was colored violet by ferric chloride. Am. Journ. Pharm., 1874, p. 235; from Pharm. Centralh.

Oil of Peppermint.—In the early part of this year a lot of this oil was offered for sale in New York by a Western dealer, which was at once suspected of being adulterated. Its flavor reminded one of some terebinthinate hydrocarbon. I could neither ascertain where it came from, nor what finally became of it. C. Schulze draws attention to a sophistication of this oil, by pouring oil of rosemary upon peppermint herb, and distilling. Arch. Pharm., Sept., 1873, p. 270, note.

Oil of Santal.—Mr. A. P. Brown reports that this oil, as furnished by some wholesale houses, is very bad, being thick, of weak odor, and smelling of copaiva. Am. Journ. Pharm., 1874, p. 299.

Oil of Wintergreen.—Dr. W. H. Pile pointed out a new adulteration of this oil. The adulterant was chloroform. The pure oil has a sp. gr. of 1.18, and boils at 400° F. This impure oil had a sp. gr. of 1.24, and boiled at 200° F. Shaking the oil in a test-tube, after warming, brought out a decided chloroform odor. From the specific gravity and the boiling-point of the adulterated oil, it must have been composed of 4 parts of true oil of wintergreen, and 1 part of chloroform. Mr. Chas. Bullock met with two cans of a similarly manipulated oil, in which, however, he found in addition, oil of sassafras; the proportions were probably 4 to 5 parts oil of sassafras, 1 part oil of wintergreen, and enough chloroform to correct the specific gravity. Am. Journ. Pharm., 1873, p. 521.

Fish Oils.—Mr. P. L. Simmonds states that much of the fish oil made in the United States is used as "olive oil" for table purposes, and also for adulterating linseed oil (compare above under Linseed Oil). About 1,400,000 gallons of fish oil are obtained in Long Island, Connecticut, and Rhode Island from the menhaden (Alosa menhaden). Chem. and Drug., 1873, No. 5.

Opium.—Stoddart met again with opium adulterated with gum senegal, and Mr. Chas. Townsend found gum tragacanth. Pharm. Journ. and Trans., Dec., 1873, p. 520.

A sample of opium adulterated with gum was sent to me by Mr. Jas. T. King, of Middletown, N. Y. The piece from which it was taken weighed twelve ounces, and had the appearance of good opium; a watery solution was precipitated by alcohol. On cutting through the piece a layer of this gummy matter, mixed up with opium, was exposed, occupying the centre.

A specimen of opium containing 10 per cent. of earthy matter was sent to Prof. Attfield by Mr. Romans. Pharm. Journ. and Trans., May, 1874, p. 899.

Pareira Brava.—J. Moss, F.C.S., found in a bale of pareira, the contents of which professed to be only the root of Chondodendron tomentosum, as much as 50 per cent. of the stem, recognized by being covered with bark, on which could be seen whitish patches of microscopic lichens and green tufts of moss. Pharm. Journ. and Trans., May, 1874, p. 911.

The same admixture frequently occurs in our market. Prof. Maisch calls attention to the fact that some lots are occasionally met with which, although derived from menispermaceous plants, yet are not from Chondodendron tomentosum. The wood is developed almost entirely in one direction, and of bright yellow color internally, sometimes in more concentric layers, and nearly tasteless. Am. Journ. Pharm., 1873, p. 522.

Rhubarb.—Mr. W. L. Howie examined thirty-six samples of (whole) rhubarb, and found only one to have been treated with turmeric, which had evidently been rubbed on the outside to improve the color.

As we have more reason to look for this substance in powdered rhubarb, I give his method for its detection. A few drops of chloroform are allowed to percolate through a pinch of the rhubarb placed upon white blotting-paper. After drying the paper a small quantity of boric acid, or a saturated solution thereof, is placed upon the most colored spot and moistened with a drop of hydrochloric acid. If turmeric is present a red color is produced, changing to black or greenish-black with solution of caustic potassa, while no change, or only a slight bleaching occurs, if the rhubarb was pure. Pharm. Journ. and Trans., Nov., 1873, p. 354.

Scammony.—Several trials of druggists have taken place in England during the last year, under the "Adulteration Act," for selling impure scammony. In one case the analyst reported 46.01 per cent. resin, and 23.6 per cent. of flour or starch. In another case the scammony was alleged to be composed of 47.96 per cent. resin; 29.5 per cent. flour; 5 per cent. chalk, and 14.35 per cent. vegetable tissue. The contradictory statements of the various witnesses regarding the origin of the foreign ingredients, and the strictures made upon the method of analysis, show that there is much room for improvement in the manner of carrying out the law. Both parties were fined twenty shillings, and besides, twenty shillings for expenses. Pharm. Journ. and Trans., April, 1874, p. 823.

Mr. H. W. Jones states that he met with scammony resin containing resin of guaiac. Ibid., Dec., 1873, p. 508.

On the other hand, M. A. F. Haselden, F.L.S., states that he has never met with any foreign resin in scammony, and does not believe that any spurious or adulterated scammony exists at present in the market. Am. Journ. Pharm., 1874, p. 422.

Serpentaria.—Prof. Maisch has received specimens of a spurious serpentaria, found in bales, received from the West. It was recognized as the rhizome of Cypripedium pubescens, L. Am. Journ. Pharm, 1874, p. 106.

Vanilla.—At the March meeting of the Philadelphia College, Prof. Maisch exhibited some Vanilla pampona from Laguayra, and some other species, which resembled the genuine, but were much less aromatic. Am. Journ. Pharm., 1874, p. 192.

I have been informed that a lot of vanilla (wild) has been sent to this country from Ecuador. It grows there in abundance, but only in a few places (for instance, Malbucho near Paramba) have attempts been made to cultivate it.

Wild Cherry, largely adulterated with sassafras bark, has been met with by Prof. Maisch. Am. Journ. Pharm., 1874, p. 192.

II. CHEMICALS AND PHARMACEUTICAL PREPARATIONS.

Acids.—In a paper on the purity of commercial specimens of the officinal acids, Mr. L. Siebold makes the following statements:

Hydrochloric Acid, C. P., very generally contains traces of iron, arsenic, and chlorine. His remarks on the insufficiency of the tests given in the Pharmacopœia are not exactly just, as the reagents, which should yield no precipitate, are merely indicated, while the manner of using them is dependent on the skill of the analyst. His own method, however, is quite correct.

Sulphuric Acid, C. P., is very generally found perfectly pure.

Nitric Acid, C. P., often contains traces of sulphuric acid, and scarcely a specimen of commercial pure nitric acid can be found, which does not yield a reaction with chloride of barium, when a tolerably large bulk of the acid is evaporated to a few drops and diluted with a little water. Chic. Pharm., 1873, p. 370, from Trans. Br. Pharm. Confer.

Hydrocyanic Acid.—Mr. A. Towerzey examined a number of samples of officinal acid, and found them to contain the following percentages:

1.92	1.32	1.16
1.56	1.26	1.16
1.36	1.22	0.26

Three samples of Scheele's acid tested respectively,

3.62	4.02	1.3 per cent.

Pharm. Journ. and Trans., Dec. 1873; Am. Journ. Pharm., 1874, p. 69.

The variableness of this acid, and the difficulty of keeping it of a uniform strength, would almost justify us in abandoning it as a remedial agent.

Acetic Acid.—A lot of "pure acetic acid of 10° B." was found on examination to mark 13.5° B., which corresponds to a specific gravity of 1.085; it contained much sulphuric acid, was free from hydrochloric acid, and assay showed it to contain 24 per cent. of monohydrated acetic acid. It was ascertained to contain 8.86 per cent. of (anhydrous) glucose. Schweiz. Woch. f. Pharm., 1872, No. 51; Arch. Pharm., 1873, p. 565.

Citric Acid.—Mr. Stoddart notes an adulteration with tartaric acid. Pharm. Journ. and Trans., Dec., 1873, p. 520.

Mr. F. A. Reichardt finds that lead is a common impurity in citric acid. He found as much as 14 grains of metallic lead in the bottom of a mortar, in which 2 drachms of the acid had been dissolved. Five more samples obtained from wholesale houses were likewise found to contain lead. Suspecting the presence of lead in citrate of magnesium and other preparations containing citric acid, he examined four samples of the former, three of which gave lead reaction, while one sample did not; but the latter was found to be a solution of tartrate of sodium. Drug. Circ., Sept., 1874.

These statements are alarming, if we consider the great quantities of citric acid annually consumed. The subject ought to be thoroughly examined.

Phosphoric Acid.—Mr. Littleton Thompson has examined a number of samples of dilute phosphoric acid, in several of which he found arsenic. Chic. Pharm., 1874, p. 129.

Tartaric Acid.—This often contains sulphuric acid. Can. Pharm. Journ., Dec., 1873; Am. Jour. Pharm., 1874, p. 32. See also these Proceedings, vol. xxi, p. 90.

Tartaric acid in powder, offered by a manufacturing house in New York, was found to contain a large percentage of alum.

Alumina, Hydrate.—Dr. Rich. Godeffroy states that nearly all hydrate of alumina is contaminated with basic sulphate of alumina, owing to the direct precipitation of the alum solutions with ammonia, which carries down some basic salt. The potash-alums of Vienna and other places contain invariably some ammonia alum, owing to the injudicious use of ammonia for the removal of the iron. Zeit. Œst. Apoth., 1874, p. 15.

Antimony, Sulphide.—Karl Castelhan reports a gross adulteration, or rather sophistication, of this substance While Mirus some years ago found sand in some commercial samples which he examined, Castelhan met with some which was nothing but a mixture of sand and pulverized coal, in the proportion of about 40 per cent. of the former and 60 per cent, of the latter, containing of metallic antimony 0.34 per cent. Chic. Pharm., 1873, p. 379.

Citrate of Magnesium.—As heretofore, a number of cases of adulterations of this article has been reported during the last year. The substitution, or at least admixture, of tartrate of soda is as common as ever. The case of the druggist of Bermondsey, England, is of sufficient interest to be cited here, especially since it is a good illustration of the principle, that druggists must be held responsible for the quality of the medicines they sell. Having a call for some granular citrate of magnesium he bought two pounds from a neighbor, and sold a quarter of a pound over the counter immediately. On analysis this was found to contain citric and tartaric acid, carbonate of sodium, and sugar. His defence, that he sold it as he bought it, and had no time to analyze it, was of no avail. He was fined £10 and costs. Pharm. Journ. and Trans., Nov., 1873, p. 376.

Cream Tartar.—The usual impurities are still reported. Among others, Mr. T. C. Hussey has found carbonate of magnesium, chloride of sodium, starch, etc. (Thesis.)

Ferri et Amm. Citras.—Mr. Umney has examined a number of samples of this article for their percentage of Fe_2O_3. Standard specimens made on purpose after the formula of the

Lond. Pharm., 1851, ...	contained	34.0
Pharm. Br., 1867, ...	"	27.4
Manufacturer's process (saturation), . .	"	30.7

The seven trade-specimens were found to contain the following percentages: 24.1, 26.0, 29.4, 30.0, 30.1, 33.3, 33.4.

They are all very fair, and merely show the uncertainty of their strength in Fe_2O_3. Pharm. Journ. and Trans., Dec., 1873; Am. Journ. Pharm., 1874, p. 73.

Ferri et Quiniæ Citras.—A lot of Howard's citrate of iron and quinia was found to be contaminated with cinchonia and quinidia. Mr. Howard explained this to have happened through the carelessness of one of their foremen. Only a few ounces had accidentally got out, and over 2000 ounces of spoiled quinia were destroyed by them, to prevent its getting into their customers' hands. Pharm. Journ. and Trans., May, 1874, p. 968.

Hydrargyrum Ammoniatum.—Mr. Stoddart found some adulterated with gypsum. Pharm. Journ. and Trans., Dec., 1873, p. 520.

Hydrargyri Oxidum (*Precip.*).—Dr. Rich. Godeffroy reports that nearly all oxide of mercury of Vienna manufacture contained carbonate of calcium, either through using caustic soda or potassa contaminated with lime, or through washing the precipitate with well-water, instead of distilled water. Zeitschr. Œst. Apoth., 1874, p. 15.

Iodine.—M. Gaston Tissandier gives a concise process for the analysis of commercial iodine (see Moniteur des Prod. chim., 1874, p. 16). His result of five commercial samples of crude iodine is as follows:

	1.	2.	3.	4.	5.
Iodine, . .	76.21	79.50	84.25	88.61	94.12
Chlorine, .	0.88	0.71	0.92	0.52	0.30
Ash, . .	1.11	1.02	0.80	0.72	0.40
Moisture, .	21.80	18.77	14.03	10.15	5.18

Nos. 1 and 2 contain more water than is usually found.

Pil. Quiniæ.—Dr. A. B. Lyons, of Detroit, Mich., examined five specimens of sugar-coated 2-grain quinine pills, with the following result:

No.	Weight of 1 pill.	Alkaloid soluble in ether from five 2-gr. pills.	Sulph. quin. from five 2-gr. pills.	Sulph. quin. in 1 pill.
1,	4.8 grs.	7.15 grs.	9.55 grs.	1.91 grs.
2,	4.7 "	7.1 "	9.5 "	1.90 "
3,	3.8 "	5.55 "	7.4 "	1.48 "
4,	3.7 "	4.65 "	6.2 "	1.24 "
5,	4.0 "	5.7 "	4.3 "	0.86 "

Potassium Iodide.—M. Stoddart met with a lot of iodide of potassium containing 10 per cent. of iodate. Pharm. Jour. and Trans., Dec., 1873, p. 520.

Quinia.—The amount of water of crystallization of commercial sulphate of quinia varies, according to Mr. J. F. Albers, from 12.32 to 19.92 per cent. of its weight. On exposing the salt in thin layers to the air in a dry place, it should not lose more than 1.5 per cent. in weight, retaining still 14.44 per cent., or 7 equivalents of water of crystallization. Arch. Ph., 1873, p. 24.

A. C. Oudemans, Jr., has met with a sulphate of quinia containing 33 per cent., or 9 equivalents, of water.

The editor of the Pharm. Journ. and Trans. states in the number for June, p. 1033, that a lot of apparently excellent sulphate of quinia had been offered for sale in London, made by a well-known continental firm, at a rate much below the ruling market-price. The reason given for the low price was "a very trifling percentage of cinchonidin."

The editor found a sample to consist of

Sulph. cinchonidia, ...	60 per cent.
Sulph. quinia, ...	40 "

There were 2000 ounces of this offered for sale.

Tincture of Iodine.—During the month of July, 1874, I came into possession of a collection of twenty-five samples of this tincture, which had been purchased in different stores of Brooklyn and New York. On examining them as to the strength of their iodine, I found the following results:

(One-half fluid ounce, which should contain about fifteen grains of iodine, was taken in each case.)

No. 1,	4 grains iodine.	No. 14,	10.6 grains iodine.
No. 2,	4.5 " "	No. 15,	11.2 " "
No. 3,	5.2 " "	No. 16,	12.6 " "
No. 4,	6.3 " "	No. 17,	12.6 " "
No. 5,	7.7 " "	No. 18,	13.4 " "
No. 6,	7.9 " "	No. 19,	13.4 " "
No. 7,	9 " "	No. 20,	14.2 " "
No. 8,	9.2 " "	No. 21,	15 " "
No. 9,	9.2 " "	No. 22,	15.1 " "
No. 10,	9.4 " "	No. 23,	15.3 " "
No. 11,	9 5 " "	No. 24,	16 " "
No. 12,	10 1 " "	No. 25,	18.1 " "
No. 13,	10.2 " "		

Nos. 1, 2, 6 contained some iodide of potassium. Nos. 4, 10, 13, 18 were watery solutions of iodine in iodide of potassium, containing no alcohol whatever; but the most remarkable specimens were Nos. 1 and 2. Being somewhat astonished at the refusal of their iodine to yield to hyposulphite solution, I soon discovered that their apparent rich color was owing to the presence of some dark-colored tincture, which appeared to me to have been tincture of rhatany. Nos. 24 and 25 are richer in iodine than necessary, probably from making a new lot in the old stockbottle before it is quite empty.

Tincture of Opium.—Mr. George W. Kennedy examined ten samples of this tincture, purchased at as many different stores, for their strength in morphia and narcotina. He found the following figures:

	Morphia in one fl. oz.	Narcotina in one fl. oz.
No. 1,	3 20	0 30
No. 2,	3.25	0.85
No. 3,	2.90	0.75
No. 4,	1.60	0.35
No. 5,	2 80	0.65
No. 6,	2.65	0.20
No. 7,	1.50	0.25
No. 8,	1.65	0.33
No. 9,	3.30	0.80
No. 10,	2.65	0.60

Unguentum Hydrargyri.—Mr. J. A. Muthersbough examined ten commercial samples of the "officinal" article, and found 100 grains of each to contain respectively: 48.5, 48.5, 48, 46, 30, 30, 26, 25, 24, 22 grains of mercury.

The first four samples may be considered as of full strength, as a slight loss is incurred in his method of assay. Am. Jour. Pharm., 1874, p. 409.

III. MISCELLANEOUS SUBSTANCES.

The British papers and journals are full of reports of trials under the Adulteration of Food Act, for selling adulterated articles of consumption, as tea, coffee, mustard, butter, flour, pepper, cocoa, jams, bread, etc. The following items deserve notice:

Butter was found to be adulterated with lard, drippings, tallow, palm-oil, and oils or fat from certain seeds. Pharm. Jour. and Trans., June, 1873, p. 1007.

Remarkable discrepancies of analysts occasionally occur. In the same sample of butter one analyst reported to have found 19 per cent. of curds and 19 per cent. of water, while another analyst reported 1 per cent. of curds and 2 per cent. of water.

In a trial against a dealer for selling butter, which the analyst testified to contain 27 per cent. of water, the judge, basing his decision upon the Pickwickian sense of the section under which the prosecution had made complaint, declared the defendant entitled to his discharge, "because no foreign substance, that is, in this case no water, had been added, or been put in; it had merely not been squeezed out."

Mustard was found to vary all the way from a mustard flavored with flour, to flour flavored with mustard.

Flour was found sometimes to contain alum, as much as ten grains in four pounds.

Bread was repeatedly found, also, to contain alum, as much as twenty-six and a half grains in four pounds. An association of bakers of Shoreditch had some pure bread examined by the public analyst, Dr. Stevenson, who reported the same "good." They then sent him two loaves of inferior bread, made on purpose, which he also reported "good." A two-pound loaf was then prepared, containing one drachm of alum, and a portion submitted to the same analyst, who reported back that the bread was "not adulterated." Another portion of the same loaf was taken to the Royal Polytechnic Institution and handed to Prof. Gardner for analysis. His report was: "Not adulterated; no alum." On being remonstrated with, he said he could only afford to make a qualitative analysis, as his fee was only half a guinea, and he could not tell how much alum there was, except by a quantitative analysis, which would have cost five guineas. He certainly had detected indications of alum, but not enough to make it worth while to report it, as it might lead to a prosecution without sufficient data. Pharm. Jour. and Trans., Nov., 1873, p. 396.

Extract of Meat.—Thomas Williams, F.C.S., found fifty grains of red lead in a can of South American extract; the cans of that firm are painted red in England, with red lead, to give them a more salable appearance. Pharm. Jour. and Trans., June, 1873, p. 1041.

Port Wine.—Mr. E. B. Shuttleworth examined a number of samples, and found some of them to yield reactions with Lapeyrère's test (acetate of copper impregnated into filtering-paper), as well as with the spectroscope, which led him to suspect artificial coloring matters, and in one sample fuchsin. He ascertained that a mixture of magenta and a blue coloring matter, known in the trade as "azalin," are largely used for coloring cheap made-up wines. To detect the latter, add to a portion of the wine in a test-tube an equal volume of amylic alcohol, and shake. The upper layer will assume a more or less characteristic pink or purple color. Genuine Port wine yields no color to fusel oil. These poisonous coloring matters may produce fatal effects. Can. Pharm. Jour., June, 1874; Am. Jour. Pharm., 1874, p. 334.

Vaseline.—This nostrum, which should properly be called paraffin ointment, being merely paraffin held in solution by paraffin oil or neutral oil, is claimed by the patentee to be prepared "by the application of sufficient heat to the residuum of petroleum, to vaporize the oil down to the residuum" (highly intelligible), and to contain no paraffin. It cannot be denied, however, that it forms a nice and agreeable embrocation.

Chloralum.—Alexander Mueller has analyzed both the fluid and the powder with the following results:

(*a.*) The fluid contains 19.1 per cent. soluble matters in solution, viz.:

16.0 chloride aluminium,
1.7 chloride calcium and magnesium,
0.1 sulphate sodium,
1.2 hydrochloric acid,
80.9 water.
99.9

(*b.*) The chloralum powder:

20.9 water.	
40.7 matters soluble in water, consisting of	13.4 chloride aluminium, 4.1 sulphate aluminium, 9.1 sulphate calcium, 14.1 sulphate sodium.
15.5 alumina soluble in HCl.	
22.9 of matters insoluble in HCl,	13 5 anhydrous kaolin, 9.4 silica.
100.0	

It is probably prepared by acting with crude hydrochloric acid upon faintly roasted native alumina. Ber. d. Chem. Ges., 1872, p. 519; Arch. Pharm., 1873, p. 56.

Iodo-Bromide of Calcium Compound.—This nostrum has been analyzed by Dr. Richard Godeffroy, who found in 100 parts of the liquid 26.425 per cent. of solids, as follows:

Chlorine, . . .	16.688	Alumina, . . .	6.476
Bromine, . . .	*trace.*	Magnesia, . . .	0.113
Iodine, . . .	*trace.*	Manganic oxide, .	trace.
Sulphuric acid, .	0.104	Ferric oxide, . .	"
Phosphoric acid, .	trace.	Potassium, . .	"
Silica, . . .	0.912	Sodium, . . .	1.092
Nitric acid, . .	trace.	Calcium, . . .	1.060

It would seem as if it were nothing but an aqueous solution of impure commercial chloride of aluminium. Zeit. Œst. Apoth., 1874, p. 117.

Chinopicric Acid (*Acide Chinopicrique*).—This substance, put on the market by Henri, Alfroy-Duguet & Perrel as a cheap febrifuge, is an amorphous mixture of the picrates of the cinchona alkaloids, often nearly devoid of quinia. Zeit. Œst. Apoth., 1874, p. 12.

A new "remedy for the habitual use of opium and morphia" has made its appearance. It is put up in bottles having the following label:

BOTTLE NO. 1. EXT. PICUS PORTEANA.

Take a teaspoonful 3 or 4 times a day.

Prescribed by DR. J. C. BECK,
No. 112 John Street, near Fourth,
Ledger 1873. *Cincinnati, O.* *Page* 178.

You will use the bottles as they are numbered, using all of No. 1 before opening No. 2, and using all of No. 2 before opening No. 3, and so on. Be careful to follow the directions, and never taking more than ordered, but you take less if you can do so and feel well.

Prof. E. S. Wayne found such a bottle to contain 8.8 grains of pure morphia in the fluid ounce, equal to about 11.7 grains of sulphate of morphia, and about twice the strength of the tincture of opium of the United States Pharmacopœia.

Respectfully,
CHARLES RICE,
E. SCHEFFER,
T. N. JAMIESON,
Committee.

REPORT OF THE COMMITTEE ON THE EXHIBITION OF SPECIMENS.

The exhibition-room, provided by the local secretary, was the lower hall of the Liederkranz building. The room was admirably adapted to the purpose, being well lighted, and affording ample space for the display of the articles on exhibition. Much taste was manifested in the decoration of the room, for which the thanks of the Association are due to Prof. E. Scheffer. The ceiling was festooned with bunting, and evergreen wreaths were suspended from the wall.

In the centre of the room was placed a collection of rare plants and ferns, presenting a very delightful contrast to the surrounding articles, and adding much to the cheerful appearance of the hall. Mr. A. Lauer, of Louisville, complimented the Association with a very large and handsome bouquet, which constituted one of the distinctive ornaments of the room.

Your committee have classified the articles on exhibition under three heads, Drugs, Chemical and Pharmaceutical Preparations, and Miscellaneous; and omitted detailed mention of the different articles which have so often been enumerated in previous reports.

DRUGS.

William H. Schieffelin & Co., New York, exhibited a well-selected variety of drugs. We noticed especially a sample of gum mastic, very clear, cantharides, bright and in good order, gum benzoin, asbestos, and a line of powdered drugs.

McKesson & Robbins, New York, made a large display of crude drugs, roots, and herbs; a full list of drugs powdered suitable for percolation. They also exhibited an herbarium of officinal German plants, rare and valuable.

Powers & Weightman, Philadelphia, exhibited several samples of cinchona barks.

B. O. & G. C. Wilson, Boston, Mass. A superior collection of their pressed herbs, leaves, and flowers, which were fully equal to those heretofore exhibited by this house, and gave evidence of the skill and care exercised by them in selecting their stock. The collection was presented to the Louisville College of Pharmacy.

Lazell, Marsh & Gardiner, New York, exhibited four varieties of cardamom seeds, and a specimen of gurjun balsam, or wood oil, lately recommended as beneficial in skin diseases.

Betanelly & Co., Philadelphia, exhibited two samples of insect powder and flowers, and two of silk cocoons imported from Caucasia. They were to be donated to the Louisville College of Pharmacy.

Good, Roof & Co., New York. Fine virgin olive oil, very handsome.

CHEMICAL AND PHARMACEUTICAL PREPARATIONS.

G. Mallinckrodt & Co., St. Louis, made one of the finest and most varied displays of purely chemical products, the quality of which appeared to be very uniformly good throughout. We especially noticed carbolic and glacial phosphoric acids, very white; chromic acid; permanganate of potassa, and piperin of exceeding beauty; beech-tar creasote, possessing the characteristic odor of true creasote; bromide of calcium, oxide of zinc, and biniodide of mercury, all presenting a fine appearance. In addition to these a specimen of purified metallic bismuth, in beautiful crystals, attracted much attention.

Powers & Weightman, Philadelphia, made their usual characteristic display of fine chemicals. We noticed specimens of crystallized sulphate of copper, nitrate of ammonia, and corrosive sublimate; a vase of nitrate of silver crystallized in large and clear plates; large vases of sulphate of morphia, sulphate of quinia, sulphate of quinidia, and sulphate of cinchonidia, very attractive and valuable.

Rosengarten & Sons, Philadelphia, had on exhibition a variety of their well-known chemical products, all very beautiful. We noticed particularly hypophosphite, and muriate of quinia, tannate and citrate of soda. Samples of Bowers's glycerin were also exhibited by this house.

Charles T. White & Co., New York, exhibited, amongst their chemical products, handsome specimens of bromide of potassium, in fine large crystals, sulphate of quinia, and sulphate of morphia, of great beauty, and stated by the makers to be quite pure; strychnia in crystals, and a select collection of other fine chemicals.

E. Scheffer, Louisville, exhibited numerous samples of his pepsin preparations. A jar containing pepsin in its pure state, in the form of thin sheets, very novel and interesting; also liquid, saccharated, concentrated, and dry pepsin. He exhibited a specimen of Sesamum indicum (benne), in bloom.

W. J. M. Gordon, Cincinnati, a large display of his chemicals and pharmaceutical products, as sugar-coated pills, fluid extracts, elixirs, and glycerin. Among the chemicals we noticed carbazotate of ammonia, muriate and sulphate of berberina, labelled hydrastin, and sulphate of ammonia, of which latter he claims to be the sole Western manufacturer.

Hartman Laist & Co., Cincinnati, exhibited samples of their glycerin.

Arthur Peter & Co., Louisville, made a handsome display of fine pharmaceutical preparations, obtained directly from the manufacturers. Prominent among these was a full line of Grimault & Co.'s products, including powdered guarana, in boxes and bulk, Follet's chloral, chlorate of potassa lozenges, etc., Herring's solid extracts, and Savory & Moor's pancreatic emulsion.

George H. Schaffer & Co., Fort Madison, Iowa, exhibited a great variety of elixirs, syrups, wines, tinctures, officinal and unofficinal fluid extracts, among them, wild cherry bark, ergot acet., bryony, crawly root, nux vomica, etc.

Arnold & McNary, New York, exhibited numerous samples of Herring & Co.'s solid extracts, selected leaves, powdered drugs, and pharmaceutical preparations, effervescent salts, and essential oils.

Keasbey, Mattison & Rutter, Philadelphia, placed on exhibition a large and handsome collection of their granular effervescent preparations, prominent amongst which we noticed their citrate of magnesia. The mineral-water salts were as usual of fine appearance, comprising Vichy, Kissingen, Seltzer, Carlsbad, Congress, Crab Orchard, and other salts; also combinations, as pepsin, bismuth, and strychnia, nitrate of cerium, citrate of lithium, bromide and iodide of potassium, iron, arsenic, quinine, etc. Citrate of magnesia, dry salt, claimed to be medicinally pure and perfectly soluble, was exhibited; also a bottle of saccharated pancreatin, prepared according to the process recommended by one of the firm in Am. Journ. Pharm., 1873–1874.

William R. Warner & Co., Philadelphia, had on exhibition a complete line of their sugar-coated pills, noticeable for their uniformity in size and elegant appearance.

Buntin & Armstrong, Terre Haute, Indiana, exhibited samples of elixirs, syrups, wines, glycerole of pepsin, and chlorate of potassa tablets.

G. E. Bell, Louisville, a collection of officinal preparations of his own manufacture, which were neat in appearance.

John Cooper & Co., New York, exhibited a full line of their cold-pressed fluid extracts, very fine in appearance, and having the characteristic odor of the drug.

McKesson & Robbins, New York, exhibited a large variety of their fluid extracts, elixirs, syrups, and pure fruit juices for the manufacture of soda syrups, a full line of gelatin-coated pills, samples of blue mass, confection of roses, Newfoundland and Norwegian cod-liver oil, table, salad, and Malaga olive oils, of fine quality.

Mellor & Rittenhouse, Philadelphia, had on exhibition samples of licorice of their own manufacture; it was free from grit, of good flavor and appearance.

James R. Mercein, Jersey City, exhibited a small collection of "home-made chemicals," illustrating the fact that a number of chemicals could be well made by the pharmacist.

W. H. Schieffelin & Co., New York, in addition to their display of drugs, exhibited a line of fluid extracts, essential oils, Merk's German chemicals, many of them rare; also samples of Möller's cod-liver oil, of which they are the American agents.

Hance Brothers & White, Philadelphia, exhibited samples of their pharmaceutical preparations, including sugar-coated pills, lozenges, syrups, elixirs, fluid extracts, and fruit syrups, the latter of which were practically tested at the soda fountain and pronounced good.

John Wyeth & Bros., Philadelphia, exhibited a line of compressed pills; the design is novel.

Lazell, Marsh & Gardiner, New York, made a fine display of their preparations, including about fifty varieties of fluid extracts, also syrups of phosphate and lacto-phosphate of iron, fruit juices and fruit essences, handkerchief perfumes in pound and ounce bottles, solid extracts, subnitrate and subcarbonate of bismuth, scale preparations of iron and alkaloids, acetate lead, pure and very finely crystallized lacto-phosphate of calcium, iodoform, and oleate of mercury.

McKelway & Borell, Philadelphia, placed on exhibition specimens of Hubbell's preparations, comprising elixirs, wines, prepared wheat, and Liebig's food for infants.

Edward A. Smith, Baltimore, exhibited samples of his fluid extracts and fruit juices.

The Cleveland Rolling Mills had on exhibition two jars of copperas. This is a secondary product of some of their processes.

Ira W. Blunt, Richmond, exhibited specimens of Valentine's well-known preparation of meat-juice.

APPARATUS, FANCY GOODS, AND MISCELLANEOUS.

Prof. Joseph P. Remmington, Philadelphia, exhibited some colored illustrations on muslin, showing the interior of a laboratory devoted to the manufacture of citric acid, also an illustration of the leaden drainers for drying the crystals. They were prepared for the purpose of illustrating the lectures on pharmacy in the Philadelphia College of Pharmacy.

Dr. W. H. Pile, Philadelphia, placed on exhibition a variety of his very excellent and accurate instruments. We noticed specific-gravity bottles, hydrometers, alcoholometers, urinometers, pipettes, and aluminium weights; also a specimen of phosphoretted resin, containing four per cent. of phosphorus.

Lazell, Marsh & Gardiner, New York, exhibited a number of Becker's prescription balances and specimens of fine weights.

Waters & Ricksecker, New York, exhibited samples of sundries and fancy goods, scales, show-cases, pungents, suppository moulds, tooth-brushes, and powder-folders. Especial mention is due the gutta-percha tissue, a substitute for oil-silk; also a fine assortment of wax-back tooth-brushes.

Lynch & Co., London, exhibited feeding-bottles, chest and lung protectors, smelling-bottles, poison-bottles, improved tincture press, pill machine, powder-folders, miniature water-bath, etc.

Sargent, Studley & Co., New York, had on exhibition a full and complete line of Laurencot French goods, consisting of various kinds of brushes, in buffalo, horn, rosewood, satin, and ebony, elegant in design and finish; also a collection of choice fancy goods.

Arnold & McNary, New York, displayed a great variety of fancy goods, including Atkinson's handkerchief extracts, soaps, sachet and toilet powders, colognes, graduates, etc.; brushes of all kinds; a full line of Maubert's soaps, embracing many odors and styles; Calvert's carbolized tow, Court Payen's white castile soap, very fine; and other articles especially adapted to retail druggists' needs.

J. H. Hubbard, Cambridge, Mass., exhibited sample of his sponge chain, a novel and convenient fixture.

W. G. Dinwiddie, Louisville, had on exhibition samples of his graduated evaporating-dishes.

Messrs. Von Beust & Co., New Albany, Ind., exhibited one of their mixing and sifting machines, which appeared to be a very desirable improvement on those heretofore in use.

Charles C. Brenner, Louisville, had on exhibition specimens of glass-labelled shop furniture, very neat and elegant in appearance.

Whitall, Tatum & Co., Philadelphia, exhibited a small line of their glass ware, including the blue-glass poison-bottle.

John Cooper & Co., New York. A reversible pill machine, capable of making four sizes of pills,—a desirable improvement.

McKesson & Robbins, New York, exhibited chamois skins of various grades; sponges, a full line, including very choice strings of bath and cup sponges; Florida and cologne waters, and handkerchief extracts; filter-racks; and one of Neynaber's pharmaceutical stills, in operation during the exhibition.

Arthur Peter & Co., Louisville, placed on exhibition four cases of finely selected cup sponges; their uniformity in size and quality excited very favorable comments.

William Gee, New York, exhibited one of his invincible soda apparatus. Its claimed superiority consists in an ingenious arrangement, by which the soda and syrup are drawn with one motion, thus giving a uniform quantity of syrup and soda to each glass. It also allows all mineral waters to be drawn from one fountain.

E. C. Penfield, Philadelphia, exhibited samples of his various kinds of trusses.

Hance Brothers & White, Philadelphia, had on exhibition specimens of their drug mill and percolators.

John Colgan, Louisville, exhibited samples of star balsam tolu or chewing gum.

Louis Snider, Cincinnati, druggists' twine and paper.

Winterburn & Stoz, Cincinnati, had on exhibition specimens of druggists' labels and blanks.

The Crab-Orchard Springs Salts Manufacturing Company exhibited samples of their salts, obtained by evaporating the waters of their springs or wells.

Houghton & Co., Philadelphia, samples of cosmolin and preparations made therefrom.

Mrs. Cyrene Smith, Louisville, had on exhibition specimens of abdominal supporters.

Samples of wines and liquors were placed on exhibition by

Newcomb, Buchanan & Co.,	Louisville.
Cochran & Fulton,	"
J. Sackstader,	"
Good, Roof & Co.,	New York.

The exhibition was one of interest to the Association. Much taste was displayed in the arrangement of the articles, and with a very few exceptions, all were desirable specimens.

In conclusion, the committee request the Association to take such action as shall, in the future, prevent the sampling of wines and liquors in the exhibition-rooms.

Respectfully submitted,

James T. King, Middletown, N. Y., *Chairman*,
T. N. Jamieson, Chicago, Ill.,
A. R. Bayley, Cambridgeport, Mass.,
Clay W. Holmes, Wilkesbarre, Pa.,
Vincent Davis, M.D., Louisville, Ky.,
Committee.

REPORT OF THE COMMITTEE ON LEGISLATION.

In a report which was read at the meeting of our Association in Philadelphia, in the year 1868, and was published in the Proceedings for that year, pp. 329–370, the writer of the present report stated, from the information received up to that time, that, "the State of Georgia is the only one in which a law was passed, intending to confine the practice of pharmacy throughout the State to competent persons." This is incorrect, as far as it relates to enacted laws; for through the kindness of our fellow-member, John D. Wilkins, of Selma, Alabama, we have recently obtained the copy of a law, which was originally passed November 11th, 1861, and was admitted into the Revised Code of Alabama, chapter ii, p. 311, A. J. Walker, 1867. It reads as follows:

"SECTION 1234 (980). *Druggists to obtain license; penalty for failure.* All druggists in this State are required to obtain a license to deal in drugs, from some medical board in this State, or from the Medical College of Alabama, and any person violating the provisions of this section, on proof thereof, is not entitled to recover for any drugs or medicines he has sold, and is also guilty of a misdemeanor, and on conviction, must be fined not less than one hundred dollars."

We have not learned to what extent this law is carried out, but it may be presumed that the licentiates do not embrace all those carrying on the business of an apothecary.

At the present time we know of three States with pharmacy laws applying to the entire State, namely, Alabama, Georgia, and Rhode Island. To this number it was expected the State of New Jersey would have been added before now, where the pharmacists have labored earnestly for a number of years past to secure the passage of such a law. Through the personal exertions of Messrs. Dalrymple, Badger, and other members of the New Jersey Pharmaceutical Association, the law passed both houses of the legislature in February last, but after the committee of pharmacists had left the capital of their State, the law was on a motion to reconsider, taken up again, and then laid upon the table. It may be reasonably expected that with another effort made by the New Jersey Pharmaceutical Association, the passage of the law may be finally secured.

During the past winter the Legislature of Kentucky passed a Pharmacy Act, applying to all towns and cities of five thousand or more inhabitants. The State Board of Pharmacy consists of seven pharmacists, appointed by the Governor of the State, and of whom, at least four must be members of the Louisville College of Pharmacy. The board was appointed and organized as follows: John J. Frost, Lexington, President; Vincent Davis, Louisville, Secretary and Registrar; C. Lewis Diehl, Treasurer and Chairman of the Executive Committee; Emil Scheffer, John Colgan of Louisville, J. J. Wood of Mayesville, and H. M. Gilson of Paducah. The provisions of the law, we are informed, have been generally complied with, and it has been well received by the pharmacists and by the public. A copy of the law is appended to this report.

On the 2d of February last, the Pharmacy Act for the city of St. Louis received the approval of the Governor of Missouri, after it had been before the legislature of that State for two or three years. The Board of Pharmacy consists of five pharmacists, elected by the members of the St. Louis College of Pharmacy for the period of three years, and is constituted at present as follows: Theo. Kalb, President; J. M. Good, Secretary; Charles Habicht, Francis X. Crawley, and M. W. Alexander. A copy of the law will be found annexed.

The pharmacy laws, as they are now in force in a number of States, appear to be best carried out in those cases where an incorporated college or association is charged with the execution thereof, and it is to be hoped that where this is not yet the case, efforts may be made to effect such a change. In the course of practical application of the laws, there will doubtless be found some points for which modifications are desirable; they should be attempted only after careful consideration. Considering that such laws have been before the legislatures of quite a number of States, and that in one State, Georgia, it has been upon the statute-book for fifty years, since 1824, when the Examining Board to regulate the licensing of physicians and druggists was first organized, the committee deem it inexpedient to enter now into a discussion upon the constitutionality of such acts, which has recently been questioned by several papers published in the *Pharmacist* and in the *American Journal of Pharmacy;* it may be well, however, to mention in this place the fact, that the committee who reported the draft of a Pharmacy Act to the Association at its meeting in Chicago, in 1869, began its labors with asking legal advice on this very question; that perhaps all the pharmacy laws now in force have either been drafted with the advice of lawyers, or in the legislatures been considered by lawyers, and that under several acts, prosecutions had been commenced, which were invariably decided in favor of the law and its executive officers.

The General Assembly of the State of South Carolina at the regular session, 1873, 1874, passed "an act to regulate the sale of intoxicating liquors, and to alter and amend the law in relation thereto;" this was approved March 19th, 1874, and contains the following provision relating to apothecaries and druggists:

"SECTION 12. It shall not be lawful for any apothecary, druggist or other persons to sell, trade or barter any bitters of which spirituous or malt liquors are an ingredient, or any other medicated liquors, by the bottle or by the drink, to any person except upon the prescription of a regular physician, unless such apothecary, druggist or other person shall obtain a license to sell such liquors as provided in section (11) eleven of this act, the price of such license to be not less than fifty dollars: *Provided*, That upon obtaining such license, such apothecary, druggist or other person shall be entitled to sell other liquors, as in case of persons having licenses to sell by the quart. Any apothecary, druggist or other persons violating the provisions of this section shall, upon conviction, be subject to the same penalties as are prescribed by law for persons selling spirituous liquors under like circumstances, without a license."

The committee desire in this report merely to mention the decision of Internal Revenue Commissioner J. W. Douglass, of September 9th, 1873, in regard to the stamping of officinal preparations and drugs when accompanied by labels containing directions. It is well known that it created universal opposition, and that a modification of the section under which the decision had been made, was favorably considered by Congress, and will probably be adopted at the next session; this in the meantime has had the effect of inducing the Commissioner of Internal Revenue to withhold the enforcement of his ruling of last year, until the question has been finally disposed of by Congress.

It is important for the members of our Association to be made aware of the fact that an apothecary has been convicted for no other offence than that of sending by mail a female syringe. Prosecution was instituted under an act of Congress for the suppression of trade in, and circulation of, obscene literature and articles of immoral use, approved March 3d, 1873, and the conviction was based upon the literal construction of this act, which provides that *no article or thing intended or adapted for any indecent or immoral use or nature* shall be carried in the mail, and that the sender and receiver of such be fined not less than one hundred dollars nor more than five thousand dollars, or be imprisoned at hard labor not less than one year nor more than ten years, or both, at the discretion of the judge. While it cannot be questioned that in passing the law, Congress can scarcely have had in view the suppression of trade in such an article of necessity under certain circumstances, this furnishes another instance of the difficulty of clearly and unmistakably defining the precise meaning of laws.

Respectfully submitted by

JOHN M. MAISCH,
Chairman.

STATE OF MISSOURI.

AN ACT *to regulate the Practice of Pharmacy in the City of St. Louis.*

Be it enacted by the General Assembly of the State of Missouri, as follows:

SECTION 1. Six months from and after the passage of this act, no person whatsoever shall in the city of St. Louis engage in the business of compounding or dispensing medicines, or prescriptions of physicians, or in the retail of poisons or medicines, without first having obtained a written certificate that he is duly competent and qualified to do so, from the Board of Pharmacy, established by this act, and without having been duly registered as hereinafter provided.

SECTION 2. The members of the St. Louis College of Pharmacy, residing in St. Louis, shall, two months after the passage of this act, and every third year thereafter, during the month of May, elect five of the most competent pharmacists of St. Louis, to serve as a Board of Pharmacy. The members of this board shall, within ten days after their election as aforesaid, individually take and subscribe, before the clerk of the County Court of St. Louis, an oath, faithfully and impartially to discharge the duties prescribed for them by this act. They shall hold their respective offices for three years, and until their successors are duly elected and qualified; and in case of any vacancy, the trustees of the College of Pharmacy shall fill the same from two or more nominees elected at a special meeting of the College of Pharmacy. The board shall organize for the transaction of business by electing a president and secretary for the whole term. The board shall meet at least once every three months, have power to make by-laws for the proper fulfilment of their duties, and three members shall constitute a quorum. The duties of said board shall be to transact all business pertaining to the legal regulation of the practice of pharmacy in the city of St. Louis, and to examine and register pharmacists. Any pharmacist applying for examination shall pay to the secretary a fee of five dollars, and should he pass such examination satisfactorily, he shall be furnished with a certificate of his competency and qualification, signed by the president and the examiners.

SECTION 3. It shall be the duty of the secretary to keep a book of registration open at some convenient place, of which due notice shall be given through the public press, in which book shall be registered the name and address of every person coming under the provisions of this act, and it shall be the duty of all such persons to appear before the secretary for registration within thirty days after this act has gone into operation, and be registered. The fee for the registration of pharmacists shall be one dollar. The secretary shall give receipts for all moneys received by him, and pay over the same to the treasurer of the College of Pharmacy, taking his receipt therefor, which money shall be used for the purpose of defraying the expenses of the Board of Pharmacy, and any surplus shall be for the benefit of the College of Pharmacy.

SECTION 4. The foregoing provisions of this act shall not apply to or affect any person who shall have a diploma or certificate from any incorporated college or school of pharmacy, whose diploma or certificate is based upon a regular term of service in the drug and apothecary business, or who shall have been engaged as proprietor in the drug and apothecary business, in the city of St. Louis, one year prior to the passage of this act, except only so far as relates to the registration, as provided for in sections 2 and 3 of this act.

SECTION 5. No person shall be allowed by the proprietor, or manager of any store, to compound or dispense the prescriptions of physicians (except as an aid, under the immediate supervision of the proprietors or his qualified assistant), unless he is a graduate in pharmacy, or has had at least four years' experience in stores where prescriptions of medical practitioners are compounded, and has passed an examination before the Board of Pharmacy to be created by this act, or such foreign pharmacists as shall present satisfactory credentials or certificates of their competency and qualifications to the said Board of Pharmacy. Any person violating the provisions of this section of this act shall be deemed guilty of a misdemeanor, and, on conviction thereof, be liable to a penalty not exceeding one hundred dollars.

SECTION 6. Every registered pharmacist, from and after the passage of this act, shall be held responsible for the quality of all the drugs, chemicals, and medicines he may sell or dispense, with the exception of those sold in the original packages of the manufacturer, and known as "proprietary medicines," and should he knowingly, intentionally, and fraudulently adulterate or cause to be adulterated such drugs, chemicals, or medicinal preparations, and shall wilfully, knowingly, or fraudulently sell or cause the same to be sold for medicinal purposes, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, be liable to a penalty not exceeding one hundred dollars, and, in addition thereto, his name shall be stricken from the register.

SECTION 7. Any person who shall attempt to procure registration for himself or any other person, under this act, by making, or causing to be made, any false presentation, shall be deemed guilty of a misdemeanor, and shall, upon conviction thereof, be liable to a penalty not exceeding five hundred dollars. Any person, not registered, who shall keep open a shop for the retailing and dispensing of medicines and poisons, or who shall fraudulently represent himself to be registered, shall be deemed guilty of a misdemeanor, and, upon conviction thereof, be liable to a penalty of one hundred dollars for each and every week during which he shall continue to carry on such business without a certificate of registration.

SECTION 8. Each and every penalty provided for in this act may be recovered by a suit brought before any justice of the peace, in the same manner as small debts are now collected.

SECTION 9. This act shall take effect from and after its passage.

PHARMACY LAW OF KENTUCKY.

CHAPTER 415.

AN ACT *to regulate the sale of Medicines and Poisons.*

Be it enacted by the General Assembly of the Commonwealth of Kentucky:

SECTION 1. It shall be unlawful for any person, unless a registered pharmacist, or registered assistant pharmacist in the employ of a registered pharmacist, or unless acting as an aid under the immediate supervision of a registered pharmacist, or a registered assistant pharmacist, within the meaning of this act, to retail, compound or dispense medicines or poisons, except as hereinafter provided.

SECTION 2. Any person, in order to be a registered pharmacist or a registered assistant pharmacist in the meaning of this act, shall be either a graduate in pharmacy, a practicing pharmacist, or a practicing assistant in pharmacy. Graduates in pharmacy shall be such as have obtained a diploma from a regularly incorporated college of pharmacy. Practicing pharmacists shall be such persons as, at or prior to the passage of this act, have kept and continue to keep open shops for compounding and dispensing the prescriptions of medical practitioners, and for the retailing of drugs and medicines, and who shall have declared their intentions in writing of keeping open shops for the compounding of prescriptions of medical practitioners and the retailing of drugs and medicines; and all other persons who, after the passage of this act, shall have declared their intentions in writing to open a shop for compounding and dispensing the prescriptions of medical practitioners, and for retailing drugs and medicines, and shall have passed a satisfactory examination before the State Board of Pharmacy.

Practicing assistants in pharmacy shall be such persons as shall have served five years immediately preceding the passage of this act, in a shop or shops where the prescriptions of medical practitioners are compounded, and such other persons as have served three years apprenticeship in a shop or shops where the prescriptions of medical practitioners are compounded, and shall have passed a satisfactory examination before the State Board of Pharmacy.

SECTION 3. The State Board of Pharmacy shall consist of seven persons, and immediately after the passage of this act the Governor shall appoint from among the most skilful pharmacists of the State the first board of pharmacy; and on the first day of July of every third year thereafter, the Governor shall appoint the State Board of Pharmacy from the registered pharmacists of the State, the Louisville College of Pharmacy to recommend to the Governor ten persons, members of said College of Pharmacy, four of whom shall be appointed on the State Board of Pharmacy. All vacancies by death, resignation, or removal from the State, shall be filled by the board from the registered pharmacists of the State.

SECTION 4. Four members of said board shall constitute a quorum. Said board shall organize by the election of a president and secretary, both of whom shall sign all certificates and all other official documents. Said board shall meet twice a year, on the fifteenth day of January and on the fifteenth day of July, and shall have power to make by-laws and all necessary regulations for the proper fulfilment of their duties under this act. The secretary of said board shall also be registrar of pharmacists. The duties of said board shall be to examine all applicants for registration, to direct the registration by the registrar of all persons properly qualified or entitled thereto, and report annually to the General Assembly, on the condition of pharmacy, together with the names of all registered pharmacists and assistant pharmacists.

SECTION 5. The duties of the registrar of pharmacists shall be to keep a book in which shall be entered, under the supervision of the State Board of Pharmacy, the name and place of business of every person who shall apply for registration. It shall also be the duty of the registrar to duly note the fact against the name of any registered pharmacist or assistant pharmacist who may have died, or removed from the State, or disposed of, or relinquished his business, and to make all necessary alterations in the location of persons registered under this act.

SECTION 6. Every person applying for examination and registration under this act shall pay to the State Board of Pharmacy five dollars, and on passing the examination required, shall be furnished, free of expense, with a certificate of registration. Any registered assistant pharmacist may, with the consent of said board, be entitled to registration as a registered pharmacist, and shall be furnished with a certificate of registration, for which certificate he shall pay the registrar one dollar. Every registered pharmacist and registered assistant pharmacist shall be furnished by the registrar of pharmacists with a renewal certificate annually, for which renewal certificate he shall pay one dollar.

SECTION 7. Any person not a registered pharmacist who shall, after the passage of this act, keep open shop for the retailing of medicines or poisons, or shall take, use or exhibit the title of registered pharmacist, or any person who shall violate any of the provisions of this act, shall, upon the first conviction, be sentenced to pay a fine of fifty dollars, and upon the second and every subsequent conviction shall be sentenced to pay a fine of one hundred dollars.

SECTION 8. The fees received for examination, registration, and certificates and renewal certificates, and all fines under this act shall be appropriated to defray the expenses of the State Board of Pharmacy.

SECTION 9. This act shall not apply to any town or city of less than five thousand inhabitants.

SECTION 10. Nothing in this act shall be construed to apply to any practitioner of medicine who does not keep open shop for compounding and dispensing medicines, nor shall it interfere with the making and dealing in proprietary medicines (popularly called patent medicines).

SECTION 11. This act to take effect on and after its passage.

JAMES B. MCCREARY,
Speaker of the House of Representatives.

JOHN G. CARLISLE,
Speaker of Senate.

APPROVED 21st February, 1874.
P. H. LESLIE.

BY THE GOVERNOR:
G. W. CRADDOCK,
Secretary of State.

COMMONWEALTH OF KENTUCKY.

COUNTY OF FRANKLIN, }
CITY OF FRANKFORT. } *ss.*

I, G. W. CRADDOCK, Secretary of State, certify that the foregoing is a true and perfect copy of an act of the General Assembly of the Commonwealth of Kentucky, passed at its December session, 1873, entitled "An Act to Regulate the Sale of Medicines and Poisons," as appears from the original enrolled bill on file in my office.

In testimony whereof, I have hereunto set my hand, and affixed the seal of my office. Done at Frankfort on this second day of April, A.D. eighteen hundred and seventy-four, and in the eighty-second year of the Commonwealth.
[SEAL.]

G. W. CRADDOCK,
Secretary of State.

REPORT OF THE COMMITTEE ON UNOFFICINAL FORMULAS.

The committee respectfully report the following formulas for unofficinal preparations:

Chlorate Mixture.

Take of Chlorate of Potassium, in fine powder,	60 grains.
Bicarbonate of Sodium,	120 grains.

Mix them.

Chlorodyne, Liquor Chloroform, Compound.

(P. Squire's Formula.)

Take of Purified Chloroform,	4 fluid ounces.
Stronger Ether,	1 fluid ounce.
Stronger Alcohol,	4 fluid ounces.
Molasses,	4 fluid ounces.
Pulverized Extract Licorice,	2½ troy ounces.
Hydrochlorate of Morphia,	8 grains.
Oil of Peppermint,	16 minims.
Syrup,	17½ fluid ounces.
Hydrocyanic Acid, 2 per cent.,	2 fluid ounces.

Directions.—Dissolve the morphia and oil of peppermint in the alcohol; mix the chloroform and ether with this solution. Mix the licorice with the syrup and add the molasses. Shake these two mixtures well together, and lastly add the hydrocyanic acid, and again shake well.

Dose.—Five to ten minims or ten to twenty drops. Shake the vial well before pouring out each dose.

Chloroform and Aconite Liniment.

Take of Chloroform,	2 fluid ounces.
Tincture of Aconite Root,	2 fluid ounces.
Soap Liniment,	12 fluid ounces.

Mix them.

This preparation has been in use many years in Baltimore under the names of "Chloroform Liniment," "Compound Chloroform Liniment," and "Chloroform and Aconite Liniment." It differs from the formula of the U. S. Pharmacopœia of 1870, which is as follows:

Take of Purified Chloroform,	3 troy ounces.
Olive Oil,	4 troy ounces.

Mix them.

Stokes's Liniment.

Take of Oil of Turpentine,	3 fluid ounces.
Strong Acetic Acid,	½ fluid ounce.
Yelk of Egg,	1
Rose Water,	3 fluid ounces.
Oil of Lemon,	60 minims.

Mix.

Balsamic Diachylon Ointment (Hebra's Ointment).

Take of Pure Olive Oil,	15 fluid ounces.
Oxide of Lead,	3 troy ounces and 360 grains.
Distilled Water,	2 pints.
Oil of Lavender,	2 fluid drachms.
Peruvian Balsam,	1 fluid ounce.

To the olive oil add half a pint of the water and mix thoroughly; then sprinkle in the oxide of lead and again stir well. Place the vessel containing the mixture in a water-bath or over a slow fire, and stir briskly until the combination is thorough. When the ointment is cold add the oil of lavender and Peruvian balsam, and mix intimately; lastly, add the remaining water.

Benzoated Oxide of Zinc Ointment.

(Kemp's Formula.)

Take of Lard and Olive Oil, each,	5 troy ounces.
White Wax and Spermaceti, each,	2½ troy ounces.
Oxide of Zinc,	2½ troy ounces.
Pulverized Gum Benzoin,	½ troy ounce.

Mix, and make according to art.

Ointment of Red Oxide of Mercury.

(With Castor Oil substituted for Lard.)

Take of Red Oxide of Mercury, in very fine powder,	60 grains.
White Wax,	120 grains.
Castor Oil,	360 grains.

Melt together the white wax and castor oil, pour the mixture into a warm mortar, and incorporate with it the red oxide of mercury.

Compound Powder of Phosphates.

Take of Phosphate of Sodium,	½ troy ounce.
Phosphate of Calcium,	½ troy ounce.
Phosphate of Iron,	½ troy ounce.
Sugar, in fine powder,	1 troy ounce.

Expose the phosphate of sodium to heat in a porcelain dish until the water of crystallization is dissipated, taking care not to continue the heat until it is caustic to the tongue. Having the other powders perfectly dry, mix the whole thoroughly.

Dose.—From ten to twenty grains three or four times daily.

Magendie's Solution of Morphia.

Take of Sulphate of Morphia,	16 grains.
Distilled Water,	1 fluid ounce.
Sulphurous Acid,	4 drops.

Make a solution.

Species St. Germain.

Take of Senna Leaves, previously digested in stronger alcohol and dried,	4 troy ounces.
Elder Flowers,	2½ troy ounces.
Fennel and Anise Seed, of each,	10 drachms.
Cream of Tartar,	6 drachms.

Mix intimately, and put up in doses of five drachms each.

Directions.—Infuse the contents of one package in half a pint of boiling water; strain, and take at one dose, for adult.

Compound Syrup of Hypophosphites.

Take of Hypophosphite of Calcium,	256 grains
Hypophosphite of Sodium,	192 grains.
Hypophosphite of Potassium,	128 grains.
Protosulphate of Iron,	185 grains.
Hypophosphorous Acid, sp. gr. 1.036,	9 fluid drachms.
Sugar,	12 troy ounces.
Water,	a sufficient quantity.

Dissolve ninety-six grains of the hypophosphite of calcium in four fluid ounces of water, with the aid of heat, and acidulate the solution with a small portion of the hypophosphorous acid. Dissolve the protosulphate of iron in two fluid ounces of water; mix the two solutions, and allow the mixture to stand until the sulphate of calcium, which is precipitated, has subsided, and pour the whole on a paper filter. After the clear solution has passed through the filter, wash the adhering hypophosphite of iron from the sulphate of calcium with a small quantity of water, acidulated as before, and preserve the solution. Dissolve the remainder of the hypophosphite of calcium with the hypophosphites of sodium and potassium in four fluid ounces of water, with the aid of heat, adding the remainder of the hypophosphorous acid. Mix the solutions, adding water sufficient to make the whole measure ten fluid ounces, which pour into a bottle containing the sugar, and agitate the mixture occasionally until the solution is complete.

Compound Syrup of Phosphates.

(Modification of E. Parrish's Formula, by W. S. Thompson.)

Take of Protosulphate of Iron,	600 grains.
Phosphate of Sodium,	720 grains.
Phosphate of Calcium,	360 grains.
Glacial Phosphoric Acid,	780 grains.
Carbonate of Potassium,	60 grains.
Carbonate of Sodium,	40 grains.
Muriatic Acid,	a sufficient quantity.
Water of Ammonia,	a sufficient quantity.
Sugar,	35 troy ounces.
Cochineal, in fine powder,	60 grains.
Tincture of Orange-Peel,	4 fluid drachms.

Dissolve the protosulphate of iron in two fluid ounces of boiling water, and the phosphate of sodium in one fluid ounce of boiling water; mix the solutions, wash the precipitate formed, and drain it on a muslin filter.

Mix the phosphate of calcium with four fluid ounces of boiling water, and add a sufficient quantity of muriatic acid to dissolve it; then add a sufficient quantity of water of ammonia to reprecipitate the phosphate of calcium; wash the precipitate and drain it on the same filter with the phosphate of iron.

Dissolve the glacial phosphoric acid in about two fluid ounces of water, with the aid of heat; add the moist precipitates, and when they are perfectly dissolved add the carbonates of potassium and sodium. Transfer the whole to a jar or bottle, and allow the precipitate which is formed to subside. Draw off the clear solution with a siphon, and preserve it in a separate vessel. To the remainder, containing the precipitate, add a sufficient quantity of muriatic acid to dissolve it, and add it to the other portion of the solution with a sufficient quantity of water to make the whole measure twenty-four fluid ounces. Then add the sugar, cochineal, and tincture of orange-peel, and agitate occasionally until the sugar is dissolved. Lastly, strain or filter.

Aromatic Syrup of Senna.

(See Proceedings of Am. Pharm. Association, 1857.)

Take of Alexandria Senna,	4 troy ounces.
Jalap,	1½ troy ounces.
Rhubarb,	½ troy ounce.
Cinnamon,	60 grains.
Clove,	60 grains.
Nutmeg,	30 grains.
Oil of Lemon,	20 minims.
Sugar,	24 troy ounces.
Diluted Alcohol,	a sufficient quantity.

Reduce the root, leaves, and spices to a moderately fine powder, and treat with the diluted alcohol, by percolation, to exhaustion; when about one quart has passed, evaporate by means of a water-bath to eighteen fluid ounces, and filter, if necessary; then add the sugar and dissolve by water-bath; when cold, add the oil of lemon. It should measure thirty-two fluid ounces.

Tincture of Gelsemium.

Take of Gelsemium, in fine powder,	4 troy ounces.
Diluted Alcohol,	12 fluid ounces.

Macerate fourteen days and filter. This tincture may also be prepared by percolation; using a sufficient quantity of diluted alcohol to displace twelve fluid ounces of tincture.

Compound Tincture of Opium.

(Diarrhœa Mixture. Formula of Dr. E. R. Squibb.)

Take of Tincture of Opium,	1 fluid ounce.
Tincture of Capsicum,	1 fluid ounce.
Spirit of Camphor,	1 fluid ounce.
Purified Chloroform,	3 fluid drachms.
Stronger Alcohol,	sufficient quantity to make the measure of 5 fluid ounces.

Each fluid drachm contains about one hundred drops, consisting of twelve drops each of the first three ingredients, and four and a half minims or eighteen drops of chloroform.

Dose.—One teaspoonful in water for adults.

Tincture of Poke Root.

(See Proceedings of Am. Pharm. Association, 1857.)

Take of Poke Root, in moderately fine powder,	6 troy ounces.
Cardamom, in fine powder,	120 grains.
Diluted Alcohol,	2 pints.

Macerate fourteen days, and filter through paper.

Sweet Wine of Iron.

Take of Pulverized Bitter Orange-Peel,	½ troy ounce.
Pulverized Calisaya Bark,	1 troy ounce.
Citric Acid,	½ troy ounce.
Citrate of Iron and Ammonium,	2 troy ounces.
Distilled Water,	32 fluid ounces.
Sherry Wine,	64 fluid ounces.
Saturated Tincture of Fresh Sweet Orange-Peel,	16 fluid ounces.
Deodorized Alcohol,	16 fluid ounces.
Syrup of Orange-Peel,	16 fluid ounces.

Mix, macerate, and filter. *Dose.*—One teaspoonful.

Respectfully submitted,
JOHN F. HANCOCK.

SPECIAL AND VOLUNTEER REPORTS AND ESSAYS.

I. PHARMACY.

THE NAME APOTHECARY,

ITS ANTIQUITY, ITS RESPECTABILITY, AND ITS PROPRIETY, AS OUR PROFESSIONAL TITLE.*

BY I. BARTLETT PATTEN.

The very old and respectable term Apothecary, borrowed from the Greek, naturalized into the English, and associated with the practice of medicine all along, as a collector, confectioner, and dispenser of drugs, is so applicable, so convenient, and so endeared to our memories, that, like the words Bible and church, none other should be found to take its place.

The earliest mention of the word is on the part of Moses, Exodus 30: 34–37. It is true, Moses did not write Greek, but the Hebrew word rakah (pronounced rokach) employed by him was rendered by a word which is commonly translated apothecary, in the Greek version made by order of Ptolemy Philadelphus, one hundred and eighty-five years before the nativity of Christ; and in the first translation of the Septuagint into the English language, by Sir C. L. Brenton, this word is rendered "perfumer," which office was and is one special department of the apothecary's calling. From the fact that in our authorized translation, and in the earlier English versions of the same Scripture, the word rakah is rendered apothecary, it would seem that the business of a perfumer was not distinguished from that of an apothecary at the time of the translation.

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* Read at the Sixth Session.

Thus Shakspeare, a contemporary of King James's translators, says: "An ounce of civet, good apothecary, to sweeten mine imagination." And from the earliest period down through the successive ages, mention is frequently made of the apothecary. In a comedy written by Aristophanes, at Athens, in the fifth century before the Christian era, the following passage occurs:

"Hast thou ere chanced to see,
Among the druggists' stores,
That beauteous stone transparent,
Which is used to kindle flame?"

In the life of Aristotle, who lived four hundred years before Christ, it is stated that he served some time in an herbalist or druggist establishment (ἀποθήκη) at Athens. And we may well suppose that at Athens, and all the great cities of antiquity, the principal corners were occupied then as now by enterprising apothecaries, making an elegant display to an admiring public. This we may conjecture from the fact that many beautiful colors, and chemical vials, vases, pots, and bottles, have descended to our times from out the Pyramids of Egypt.

We know but little of the Materia Medica of those days, but it seems to have been almost entirely vegetable, which indeed was the case down to the time of Paracelsus, who introduced the medical use of mercury, and several other minerals, and who was also the inventor of elixirs. The first Pharmacopœia on record was published in the year 49 before Christ.

In the golden and silver ages of the Roman Empire, great advances were made in pharmacy, and some valuable compounds discovered, which are still retained in our modern Pharmacopœias. Previous to the fourth century, the apothecary and the physician were sometimes combined in one man, as in the case of the distinguished Galen, who kept a drug store at Rome, but more commonly was simply a pharmacopolist or herbalist to whom physicians went to procure simple substances for compounding. It was not till the fourth century that pharmacy became a distinct branch of medicine.

With the decline of the Roman Empire, science and learning became nearly extinct in Western Europe, superstition and blind empiricism prevailed, and pharmacy made no progress. In the East, particularly at Alexandria, chemistry and pharmacy were cultivated with ardor, and the apothecaries were a numerous body, respected for their learning, and high in social position, under the protection and strict supervision of government. The first renewal of medical science in the West, after the dark ages, was at Salerno, where arose a celebrated school in the eighth century, and from that time apothecaries began to be numerous throughout Europe. All the graduates from the College of Medicine were obliged to take an oath that they would never receive a percentage from an apothecary. The following are instances of the early English usage of this word:

"And forth he goeth, no longer would he tarry,
Into the town unto an pothecary,
And praid him that he him would sell
Some poison, that he might his rations quell."—*Chaucer.*

"And therefore happy is he which in sickness fyndeth a discrete and well-learned physition and so true a pothecary that hath always drouges uncorrupted."—*Sir Thomas Elyot.*

"How say you, were it not a wonder to hear that clothmakers should become apothecaries?"—*Latimer.*

"A detection of the daily enormities and abuses committed in physic, concerning the three parts thereof, that is of the physician's part, the part of the surgeon, and the part of the pothecaries?"—*Wood's Antiquaries of Oxford; Wood's Athenæ Oxoniensis.*

Thus we perceive that in some form and signification this word was used from the earliest recorded ages down to the time of the Stuarts. Yet it has advanced its import and meaning. For be it remembered that at this time there was no chemistry in the modern sense of the word, but, in its place, alchemy and the occult art, no recognized Pharmacopœia, but in its place, Avicenna and Serapion on simples. These books, with the Liber Servitoris of Bulchasin, treating of the preparation of animal, vegetable, and mineral substances, with perhaps some other favored work of the apothecary's own selection, qualified him to be a useful and indispensable member of society, one of a class which have handed down their name with import and influence to our own day.

A peep into the Polyglot Dictionary, or into the dictionaries of any or all of the states composing the old Roman Empire, from Scotia to Constantinople, will prove that the word apothecary was in constant and general use. The introduction of "pharmacien" into the French vocabulary (probably by Lavoisier, the great dictator of scientific nomenclature), may strike one as affording an exception to this rule, but it is not an exception, only an innovation. Previous to this time a drug establishment was called an apothecary's hall and its proprietor an apothecary, in France, and the trade was under the supervision of the medical faculty. The Apothecaries' Company or the Society of Apothecaries for the City of London, Great Britain, was incorporated by James I in 1606. Their last charter bears the date December 6th, 1617.

The first attempt to supersede the time-honored name of apothecary, in the United States, was made in the city of Philadelphia, in 1839, by Mr. Blair, who devised the name of pharmaceutist, hitherto unknown to lexicographers, and displayed it at full length upon his sign. This excited much comment at the time among the pharmaceutical profession, and was thought somewhat pretentious; and the people of that day, particularly the German farmers from the surrounding districts, as they stopped to puzzle out the long word, which they pronounced in all manner of ways, wondered what sort of an animal it was. Few followed Mr. Blair's example, and for some years the apothecaries "held undisturbed their ancient reign," and no newfangled names entered their sacred inclosure. But at length the College of Apothecaries concluded to change their name to the Philadelphia College of Pharmacy,* and not long after, from the same source, emanated a new word, and some few in the Quaker City began to write themselves pharmacists, and of late, even as far north as conservative New England, occasionally may be seen a showy store, resplendent with gilt and plate-glass, with an immense Mansard soda fountain, a cigar-case, two hundred varieties of sugar-coated pills and one hundred elixirs, over whose door is conspicuously painted "Pharmacist." One might at first suppose that as his business was such a miscellaneous nature, consisting so largely of proprietary medicines and fancy articles, his modesty would not permit him to rank himself among the time-honored fraternity of apothecaries. But no—it is intended to supersede the old word. It seems to say: "I am superior to any apothecary. They will soon die out. Who cares? I have newer lights, more science, modern chemistry, French schools." But with this party of progress, who would foist upon us a new name, we have no sympathy, but are well satisfied that our professional title should remain in the future, as in the four thousand years of the past, plain apothecary. Why not pharmacist? it may be asked. Firstly, because it is a well-established rule not to introduce a new word or name for a substance or quality, unless it is wanted, unless there is no term in the present vocabulary expressive of the same thing. A writer has truly said, that, from want of attention to this rule, our English dictionary, especially inclusive of scientific and technical terms, is becoming very like the mob at the foot of the tower of Babel, each uttering a different sound, or the same sound in a new sense. And there are now, owing to the demands of science, pseudo-science, and quackery, so many Greek vocables naturalized and employed, that I have sometimes thought some future archæologist might persuade himself and his disciples that the Greek language was derived from the English, as the former is from the Sanscrit.

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* See Prefatory Notice.

Secondly, it creates confusion. Throughout America everybody, old and young, knows what an apothecary is, but very many do not understand what is meant by a pharmacist. In Great Britain, throughout Europe, and indeed throughout the civilized world, the word apothecary is familiar in every household, but the great body of the population would not know that pharmaceutist, pharmacist, or pharmacien has anything to do with a drug store. And although these words like their preoccupant have a Greek original, yet they have a meaning in that language at which our natural and professional modesty might revolt, namely, a dispenser of poisons; in fact the Greek word *φάρμακον* seems to have been used principally in this connection by the best Greek writers.

Boston, September, 1874.

ON CLEANLINESS AS A PHARMACEUTICAL VIRTUE.*

BY J. M. AYERS.

In answer to Query No. 48, continued to me at your last session, "An Essay on Cleanliness as a Pharmaceutical Virtue, and especially on the means and methods of cleaning bottles, mortars, and vessels of all kinds in daily or occasional use," I have the honor to submit the following:

Cleanliness, as defined by Webster, is "freedom from dirt, filth, or any foul matter, neatness of person or dress, purity." That these qualities are virtues in every station, profession, or occupation in life no one will probably deny, but in ours, which has for its primary object the preparation and dispensing of medicines for the relief of our sick and afflicted fellow-mortals, it is even more than a virtue, it is an indispensable requisite.

While occasional persons may accumulate a moderate competency (as the world goes) in the conduct of a "drug store," which partakes quite as much of the character of a "grocery" or a "dram shop" as of a "pharmacy," as well in the nature of the business therein transacted, as in the degree of cleanliness of its attaches and surroundings, I am sure I will be borne out in saying that, in no instance does the virtue of cleanliness, with its ever-present coadjutors, order, precision, and sobriety, ever fail of meeting its reward. Not that the pecuniary outcome is to be the end and aim of our professional lives, for above and beyond this the true pharmacist looks to the time when, with retrospective gaze, he shall view over the days of patient, painstaking labor, given to the advancement of his favorite science, and, looking back over the record of a busy life, find no errors chargeable to his lack of cleanliness, care, or competency in his profession. It is certainly a matter of congratulation that there is to-day a more general awakening of the pharmacists of our land to a love of *the science* of their profession, and a more general disposition to follow that profession in the scientific spirit, as well as the letter of its demands, and thereby earn for its members in the coming generation, what is not accorded them in this, places side by side with those of the other learned professions, not given grudgingly, but gracefully, as a meed of right.

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* Read at the Fourth Session.

As a foundation for this new era, our subject-theme cannot be too vividly impressed on the minds both of the present and of the coming generations, on the former as teachers, and the latter as disciples. " As the twig is bent so is the tree inclined," and unless a young man is of such habits of cleanliness, neatness, and systematic preciseness, as to insure his making a successful pharmacist, he should not be employed or retained as an apprentice to the profession, but should be candidly told (which would be a fact) that it would be a sheer waste of his time to try to qualify, for no matter what his education, or aptness, or memory, or any other redeeming traits, the lack of the *one thing needful* makes the foundation unfitted to uphold a successful pharmaceutical career.

There are many things which go to constitute and engender an air of cleanliness about a pharmacy, among which I notice:

1st. Cleanness of all persons connected therewith.

2d. Cleanness and brightness of shop furniture and fixtures.

3d. Cleanness of work-rooms, dispensing department, and tools.

By cleanness of attaches of a pharmacy it will not, I presume, be supposed I would expect every one, from proprietor to porter, to look as though he had just stepped out of a bandbox, but we all know there is a condition of evident attempts at personal cleanliness that is some degrees removed from the premeditated dirtiness, which no doubt all of us have seen, displayed in the "matted and combined locks," time-worn and dirt-begrimed hands, and ancient, grease-glazed knees and elbows of a confirmed sloven. Ordinary attention to the details of personal cleanliness will show as advantageously and as creditably in the persons of compounders and dispensers of medicines as in any others, and, if we but bethink ourselves that the mixtures we make, the powders we fold, and the pills we roll, are for the tender stomachs of patients who often watch jealously our every motion, in the vague dread of some act betokening a lack of care and nicety in our manipulation, we should probably apply to ourselves the golden rule to "do unto others as we would that others should do unto us," and should be more than ever alive to the importance of this subject, and to the necessity of a painstaking persistent inculcation of this cardinal principle in all over whom we had any control. Not to enumerate all special habits of uncleanness, who of us has not seen a dispensing pharmacist with dirty hands and face, unkempt hair, loosely flying about his head, or mouth filled with tobacco, with juice slowly trickling out at the corners, bending over a pill mass, and compelling a fear in the observer that, by some misadventure, the finished mass might possibly contain some foreign mixture, either of nicotin, capillary growth, or other uncleanness? And who has not had occasion to rebuke his apprentice for licking the lips of syrup-bottles after dispensing, or for wiping off spatulas on his clothes, or many other equally unclean practices not necessary to be enumerated? And if these things are so reprehensible in our sight, how disgusting would they be to the poor, weak, over-sensitive dyspeptic or consumptive, in whose sight they are liable to happen unless ultra cleanliness be inculcated in the apprentice from the beginning.

Shop furniture and fixtures should be arranged with a view to the ease of their being kept bright and clean. On the former glass labels are doubtless "ne plus ultra." For the latter a pure white is beautiful when it is practicable to keep one person employed continually in cleaning it, as may be the case in large central establishments, but dingy, fly-specked, or smoke-begrimed white shop fixtures are anything but handsome. Oiled and polished walnut or ash, or other hard woods, look rich, and are easily kept clean in appearance. Much carved work should be avoided. Plain surfaces are easily dusted, as they should be many times a day, and an occasional rubbing off with soft cloth brightens them up wonderfully. Ceilings and walls, whether of fresco, paint, or paper, should be well varnished, that they may be frequently brightened up by going over with sponge and cold water. All shop bottles should be sponged off and polished dry with newspaper at least once a week. Tinctures should be made in a separate bottle, and filtered into the shop bottle. The practice, which is too frequent (as I have seen), of having the tinctures in preparation on the shelves detracts from neatness and good pharmacy. Shop bottles should always be thoroughly cleansed inside and out before replenishing. This habit will be found to add much to the brightness and attractiveness of the store. Cleanliness is a first-class advertisement, and very cheap too, for its practice begets economy.

The cellar, work-room, compounding department, and tools all want to be kept scrupulously clean and in order. "Order is heaven's first law," and cleanliness is synonymous therewith, for it is said, "cleanliness is next to godliness," and certainly without cleanliness there can be no order. The shelves, the floor, the windows, the work-table, must all come within the universal requirement of being kept thoroughly cleansed, and all the tools, appliances, and apparatus in daily or occasional use, freed from blemish of dirt or stain, and in their proper place. The pans of the prescription scale should be cleansed after the balancing of each article by the dispenser, and always returned to their places clean and dry. There should be a distinct shelf, table, or cupboard for the setting aside of mortars, graduates, spatulas, etc.; after use to be washed clean and wiped dry and put carefully away in a clean closet, free from dust, ready for use again. The cleansing of these tools and appliances should be one person's work, and he should be held responsible for its faithful performance. It usually devolves on the younger apprentice, and, in connection with it, he will find many a chemical problem as to best solvents for different substances, and, in this way, early learn to utilize the science.

As to best methods of cleansing bottles, mortars, etc., I will but say that this is such an interminable subject that I can but make a few general suggestions. To our city pharmacists, who have, through their waterworks, the advantage of a never-failing fountain of soft water at their hand at all times, the question of preparing for convenient and expeditious cleansing of these articles is already solved, but to our friends in the smaller towns, who form a very large proportion of the live pharmacists of our land, I will offer a hint in this direction. Although at their homes the corporations may not boast of a reservoir, or holly, or other system of waterworks, yet it is practicable for every pharmacist to, in a measure, supply that lack by placing a well-built tank or cask in room above his store, or in an elevated position in the store, filling it by a force-pump from some adjacent cistern, and drawing off the water from it into a sink, to which is attached a drain-pipe to carry the waste water to the street or sewer. This sink should be of wood, lined with sheet-lead, about six inches deep, thirty inches long, and twenty inches wide. With such a fixture in a convenient portion of the store the labor of cleansing all appliances would be greatly lessened, and I submit that some such arrangement is an absolute necessity in every pharmacy, city or country. With it, and a convenient arrangement for heating water when necessary, and sponges, common soap, bottle-brushes of different sizes, solutions of caustic potash, chloride zinc, oxalic acid, etc., for obstinate cases, a good light piece of pumice-stone for stains on Wedgwood-ware, with some experience in the virtues of chemicals, and some perseverance in the direction of cleanliness, the virtue whose praises we sing, the methods of cleansing would soon be universally, practically, learned. I have found common brown paper made from straw to be a valuable adjunct to alkaline solutions for removing obstinate stains from the insides of bottles. I notice a late writer objects to the use of lead shot as mechanical cleansers on account of the danger of poisoning by the arsenic they may contain. I submit that the objection is rather far-fetched. Spatulas should be kept bright by frequent use of bath-brick or rottenstone, and flannel, which should be kept dry in a covered box for the purpose. The use of chemical agents to remove stains from the hands frequently leaves the skin harsh, wrinkled, and uncomfortable. I have found the use of glycerin or any of the soft oils to successfully counteract this.

If the few hastily jotted remarks which I submit on this subject should have any effect in directing the attention of pharmacists to the importance of this subject, as a matter to be actively and continuously impressed on the minds of their young men, I shall feel amply repaid. The old are set in their ways, and, if those are ways of neatness, so much the easier to instruct accordingly, but if not, let us see that the next generation is an improvement on this in that respect. Let them follow precept rather than example.

ST. LOUIS, MO., September 6th, 1874.

ASSISTANT PHARMACISTS.*

BY PAUL BALLUFF.

QUERY 29.—What preference is shown to graduates in pharmacy, as compared with non-graduates, and how do their salaries compare?

I CAN answer this query only in a general way, and as far as it concerns larger cities. To answer it fully and in detail, would have required the gathering of information from all parts of the United States, so as to be able to give date and figures, which trouble and labor I did not deem in proportion to the small importance of the query.

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* Read at the Third Session.

What I know from my own experience, and through information obtained from proprietors of larger and smaller pharmacies, as well as from graduated and non-graduated assistants, I condense in the following brief report.

In a like proportion as pharmacy, in its progressive development within the last fifteen years, has elevated itself in many parts of the United States above the *niveau* of a mercantile business or trade, and in the same measure as its importance as a branch of public hygiene has been acknowledged, and the necessity of a pharmaceutical education of those who undertake to prepare and dispense the medicines for the sick is understood by the public, has the estimation of the value of the diplomas granted by our schools of pharmacy increased, has the holder of such a diploma, the graduate of pharmacy, gained in reputation and respect in the eyes of the practitioners of pharmacy and medicine. To be a graduate in pharmacy has indeed become a recommendation for the assistant who applies for a situation, and is to him an advantage over the non-graduate. There is in most cases a preference shown to him when a vacancy at the prescription counter or in the laboratory is to be filled, and where he is able to take part of the responsibility off his employer's shoulders.

This is particularly the case in cities or States where the practice of pharmacy has been restricted by legislative enactments to examined pharmacists, the latter are made responsible for what they dispense, as well as for what they prepare; and where the law makes a distinction between a *licentiate*, whose certificate of competency obtained from a board of pharmacy is of an inferior and only local value, and a *graduate* of pharmacy, whose diploma is acknowledged all over the land, and even in foreign countries.

The salary paid to a graduate corresponds with the responsibility and importance of the position assigned to him, and depends also on his practical skill and experience, and on the extent of the business done at the respective establishments; but on an average seems to be higher than that paid to an ordinary clerk.

But the perfect American apothecary is not to be only a well-instructed pharmacist, who keeps pace with the progress of his profession, but also a good practical business man, for, with a competition only partly limited by a qualification and proof of competency, lawfully required by a few cities and States, the number of pharmacies is so great that the income derived from the legitimate pharmaceutical business would not be sufficient to sustain them, and the pharmacist is compelled to rely upon resources offered him by the sale of other than pharmaceutical articles. Consequently, proprietors of larger establishments have also to look out for assistants who are well adapted to and posted in this part of their business, and in many instances the services of an assistant of only moderate pharmaceutical attainments, but who is well qualified for the general business routine, are as well valued and remunerated as those of a graduate.

However, the abovementioned relation between the progress of pharmacy and the increasing value of the pharmaceutical diplomas will probably continue to exist, until the practice of pharmacy is exclusively in the hands of graduated pharmacists, if such a thing is ever possible.

ON THE SALARIES OF ASSISTANT PHARMACISTS.*

BY HENRY N. RITTENHOUSE.

QUERY 30.—How do the salaries of drug clerks compare with the salaries of clerks in other business, and with those of skilled mechanics?

IN offering an answer to this query it will be my object to confine myself simply to the money view of it, to lay aside all motives of a preference for the profession of pharmacy, and the advantages it may possess as a means of obtaining a living or in time a competency. The comparative ease by which clerks may become proprietors, as compared with many other businesses, and the ever-occurring matters of interest and advancement in the daily practice of pharmacy, which suggest themselves to the skilled and well-educated man, are a constant source of interest and pleasure to him.

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* Read at the Third Session.

I expect to show in the course of this paper that in the matter of dollars and cents the employed pharmacist receives less compensation for his services than almost any equally well-skilled clerk, salesman, or mechanic, when the hours of labor during a week are compared. I therefore assume that the young man whc wishes to obtain good wages, or as a proprietor a competency, must press on through the discouragements of poor pay and long, tedious hours of much drudgery and routine work for years, be stimulated by a love for his occupation or fitness for it, and a sufficient preliminary education to enable him to successfully study it.

The following tables are those published by the Bureau of Statistics of the United States, being the latest from that department, and the only one accessible to the writer.

It must be borne in mind, that what is here presented is in a general way, and applies to the larger cities mainly, but will serve for the purpose we have in view; that individual cases will of course vary either way, and that locality may also vary somewhat the figures here presented.

For the purposes of this comparison I assume the drug clerk is employed six and a half days in each week, each day consisting of thirteen hours, exclusive of meal-times, the half day being half of every Sunday on an average; this gives in even numbers eighty-five hours per week, from which deduct the leisure usually allowed drug clerks, which I take to be nine hours per week; this gives us seventy-six hours net per week. Mechanics, clerks, and salesmen usually average not more than ten hours per day, or sixty hours per week (and very frequently not that), a discrimination against the drug clerk of sixteen hours per week, or 21 per cent. in time.

From the tables here presented any one can compare the compensation received in these trades and in pharmacy.

MISCELLANEOUS TRADES.

Table showing the Weekly Wages of eighty-eight Trade Societies in the City of New York and vicinity in the respective years 1860 *and* 1869.

	1860.	1869.
Bricklayers,	$12 00 to 14 00	$27 00 to 30 00
Brickmakers,	15 00 to 18 00	21 00 to 24 00
Boot and shoemakers,	9 00	12 00
Boot and shoe finishers,	10 00 to 12 00	18 00 to 21 00
Bakers,	7 50	8 00 to 15 00
Blacksmiths,	12 00	20 00
Boilermakers,	10 00	18 00
Brass founders and finishers,	14 00	21 00
Bookbinders,	14 00	20 00
Bluestone cutters and flaggers,	15 00	18 00 to 24 00
Brownstone cutters,	15 00 to 18 00	27 00 to 30 00
Bellymen,	18 00	18 00 to 24 00
Bookfolders, female,	5 00	8 00 to 15 00
Carpenters,	12 00 to 15 00	21 00 to 27 00
Carpenters (amalgamated),		21 00 to 24 00
Cabinetmakers,	7 00 to 10 00	18 00 to 20 00
Carvers and gilders,	12 00 to 18 00	25 00 to 30 00
Cutters,	9 00 to 13 00	18 00 to 25 00
Curriers,	9 00 to 12 00	15 00 to 20 00
Clothing cutters,	10 00 to 12 00	20 00 to 24 00
Clerks, dry goods,	7 00 to 10 00	15 00 to 18 00
Compositors, male,	12 00 to 15 00	20 00 to 24 00
Compositors, female,		12 00 to 20 00
Cardmakers,	3 75 to 5 00	5 00 to 12 00
Cartmen,	7 00 to 12 00	15 00 to 18 00
Cigarmakers,	9 00 to 12 00	15 00 to 20 00
Confectioners,	5 00 to 7 00	7 00 to 15 00
Coopers,	9 00 to 12 00	20 00 to 24 00
Coach drivers,	7 00 to 10 00	15 00 to 20 00
Capmakers, males and females,	7 50 to 10 00	12 00 to 20 00
Derrickmen,		18 00
Engineers,	12 00	18 00 to 30 00
Goldbeaters,	10 00	14 00 to 18 00
Gas and steam fitters,	15 00	21 00 to 24 00
Horseshoers,	12 00 to 15 00	21 00 to 27 00
Horsesmiths,	10 00 to 16 00	18 00 to 27 00
Hatters,	12 00 to 15 00	15 00 to 30 00
Hod carriers,	7 00 to 10 00	12 00 to 18 50
Iron moulders,	10 00	15 00 to 21 00
Jewellers,	12 00 to 30 00	25 00 to 60 00
Longshoremen,	7 00 to 9 00	15 00 to 21 00
Laborers,	5 00 to 7 00	10 00 to 15 00

	1860.	1869.
Lathers,	$12 00	$27 00
Marble cutters,	16 00 to 18 00	24 00 to 30 00
Marble rubbers,	15 00 to 18 00	21 00 to 24 00
Marble polishers,	8 00 to 18 00	15 00 to 18 00
Masons,	10 00 to 12 00	27 00 to 30 00
Millers,	10 00	18 00
Machinists,	12 00	15 00 to 18 00
Painters,	12 00	21 00 to 24 00
Plasterers,	12 00 to 14 00	24 00 to 36 00
Plumbers,	12 00 to 15 00	18 00 to 24 00
Paperhangers,	7 00 to 12 00	15 00 to 18 00
Paperstainers,	12 00	18 00
Pressmen,	12 00 to 15 00	20 00
Pressmen (Adams),	12 00 to 15 00	18 00 to 24 00
Press feeders,	7 00 to 12 00	12 00 to 18 00
Proof readers,	8 00 to 12 00	18 00 to 30 00
Pencil-case makers,	10 00 to 14 00	18 00 to 21 00
Piano-case makers,	12 00 to 14 00	20 00 to 25 00
Piano finishers,	15 00 to 18 00	20 00 to 30 00
Piano-key makers,	10 00 to 12 00	15 00 to 20 00
Piano regulators,	15 00 to 18 00	20 00 to 30 00
Piano sawyers and planers,		18 00 to 25 00
Piano machinists,	12 00 to 14 00	20 00 to 24 00
Picture-frame makers,	10 00 to 15 00	18 00 to 22 00
Plate printers,		25 00 to 30 00
Pastry cooks,	8 00 to 10 00	18 00 to 21 00
Quarrymen,	8 00 to 10 00	15 00 to 18 00
Roofers, tin,	10 00 to 12 00	15 00 to 20 00
Roofers, slate,	12 00 to 14 00	24 00 to 30 00
Restaurant and hotel carvers,	12 00	20 00
Stonecutters,	12 00 to 15 00	15 00 to 18 00
Stairbuilders,	12 00 to 16 00	21 00 to 27 00
Sawyers,	8 00 to 10 00	15 00 to 21 00
Silversmiths,	12 00	15 00 to 21 00
Stereotypers,	12 00 to 15 00	18 00 to 20 00
Sailmakers,		21 00
Shoe clerks,		10 00 to 20 00
Seamen (monthly),		30 00 to 60 00
Trunkmakers,	9 00 to 12 00	14 00 to 18 00
Tailors,	12 00 to 14 00	18 00 to 20 00
Type casters,	12 00 to 15 00	20 00 to 25 00
Upholsterers,	10 00 to 14 00	18 00 to 25 00
Varnishers and polishers,	12 00 to 15 00	18 00 to 25 00
Waiters (monthly),	15 00	35 00 to 60 00
Watchmakers,	18 00	30 00
Watch-case makers,	12 00	15 00 to 15 25
Number of societies,		88

	1860.	1869.
Number of workmen,		72,544
Druggists in New York,	$12 00 to 15 00	$15 00 to 20 00
Druggists in Philadelphia,	10 00 to 12 00	12 00 to 15 00

Brooklyn Trades Union.

Bricklayers,	$12 00 to 18 00	$21 00 to 30 00
Britannia workers,		18 00 to 30 00
Carpenters,		24 00
Drygoods clerks,	8 00 to 15 00	12 00 to 24 00
Hackmen,	7 00 to 11 00	12 00 to 18 00
Iron moulders,	10 00	18 00 to 30 00
Junkmen,	8 00 to 12 00	15 00 to 18 00
Laborers,	6 00 to 8 00	15 00 to 18 00
Lightermen,	9 00 to 12 00	15 00 to 18 00
Marble cutters,	12 00	24 00 to 27 00
Marble polishers,	10 00 to 12 00	24 00 to 27 00
Masons,	10 00 to 12 00	27 00 to 30 00
Plasterers,	10 00 to 15 00	24 00 to 30 00
Number of societies,		13
Number of members,		3446

Table showing the wages paid in San Francisco and vicinity in 1869 *for the following kinds of labor.*

(From the Annual Report of the California Labor Exchange, May, 1869.)

Occupation.	Wages offered (gold).
Apprentices,	$15 to $35 per month and found.
Apothecaries,	40 to 50 per month and found.
Bakers,	30 to 50 per month and found.
Bartenders,	40 to 45 per month and found.
Barbers,	80 per month.
Bedmakers,	25 to 35 per month and found.
Bellhangers,	2.50 to 3 per day.
Blacksmiths,	60 to 100 per month and found.
Blacksmiths' helpers,	2 to 2.50 per day.
Boilermakers,	35 to 60 per month and found.
Bootblacks,	45 per month.
Bookkeepers,	35 to 100 per month.
Boot and shoemakers,	35 to 60 per month, one-half share piece.
Bottlers,	35 to 40 per month and found.
Boys,	10 to 40 per month.
Bricklayers,	4.50 to 6 per day.
Brewers,	50 per month.
Bridge builders,	75 per month and found.
Brush and broommakers,	75 per month and found.
Burnishers,	2 to 3 per day.

Occupation.	Wages offered (gold).
Butchers,	$35 to $60 per month and found.
Butter makers,	30 to 45 per month and board.
Brickmakers,	35 to 60 per month and board.
Brickyard hands,	30 to 40 per month and board.
Boxmakers,	49 per month and board.
Coachmen,	35 to 50 per month and board.
Coal miners,	1 to 1.25 per yard.
Coal passers,	35 per month and found.
Coalyard men,	30 to 35 per month and found.
Coffin makers,	2.50 to 4.50 per day.
Confectioners,	40 to 60 per month and found.
Cooks,	35 to 100 per month and found.
Coopers,	2 to 3.25 per day at piece work.
Coppersmiths,	3 to 4.50 per day.
Curriers and tanners,	3 to 3.25 per day, and 50 to 60 per month.
Card strippers,	3 to 4 per day.
Cabinetmakers,	3 to 4 per day at piece work.
Carpet weavers,	according to ability.
Carpenters (house),	3 to 4 per day.
Carpenters (ship),	3 to 5 per day.
Carriage painters,	3 to 4 per day.
Carriage builders,	3.50 to 4 per day.
Carriage trimmers,	3 to 4.50 per day.
Calkers,	3 to 4 per day.
Carvers,	piece work.
Charcoal burners,	35 per month and found.
Cheesemakers,	30 to 45 per month and found.
Clerks,	40 to 75 per month and found.
Deck-hands,	40 per month and found.
Dishwashers,	30 to 35 per month and found.
Door and sashmakers,	2.50 to 4 per day.
Druggists,	60 per month and found.
Dyers,	40 to 50 per month and found.
Dairymen,	30 to 45 per month and found.
Engineers,	4 to 5 per day.
Engravers,	piece work.
Edgers,	40 to 50 per month and found.
Farm laborers,	1 per day, 30 per mo. and found, winter; 2 per day, 40 to 50 per mo. and found, summer.
Filers (saw mills),	40 per month and found.
Firemen,	40 to 60 per month and found.
Fishermen,	two-fifths share of take.
Flour packers,	60 to 80 per month.
Foundrymen,	2 to 2.50 per day.
Fringemakers,	60 per month.
Fruit peddlers,	30 to 35 per month, shares.
Fruit packers,	25 to 35 per month.

Occupation.	Wages offered (gold).
Furniture polishers, .	. $2 per day.
Foremen, ...	. 45 to 60 per month and found.
Fence-builders, . .	. 35 to 40 per month and found.
Gardeners, . . .	. 30 to 40 per month and found.
Gasfitters, . . .	. 3.50 to 4.50 per day.
Generally useful, .	. 30 to 40 per month and found.
Gilders, . . .	. 50 to 60 per month and found.
Gluemakers, . .	. 35 to 50 per month and found.
Gravediggers, . .	. 50 per month and found.
Grocers' help, . .	. 20 to 40 per month and found.
Grooms, etc., . .	. 30 to 40 per month and found.
Gunsmiths, . .	. 3 to 5 per day.
Grainers, . . .	. 2.50 to 3 per day.
Hair and ropemakers,	. 2.50 to 3 per day.
Harnessmakers, . .	. 40 to 65 per month and found.
Hodcarriers, . .	. 2.50 per day.
Hosemakers, . .	. 2.50 to 3 per day.
Hostlers and teamsters,	. 40 to 45 per month and found.
Housekeepers, . .	. 30 to 40 per month and found.
Horseshoers, . .	. 2.50 to 3.50 per day.
Harness-cleaners, .	. 45 to 60 per month.
Hair-spinners, . .	. 2.50 to 3.50 per day.
Interpreters, . .	. 30 to 40 per month and found.
Iron-moulders, . .	. 3.50 to 4 per day.
Iron railmakers, . .	. 3 to 3.50 per day.
Jewelry polishers, .	. 2.50 to 3 per day.
Laborers, . . .	. 2 per day, 30 to 35 per month and found.
Lastmakers, . .	. 2.50 to 3 per day.
Lathers, . . .	. 3 to 4 per day.
Laundrymen, . .	. 30 to 45 per month and found.
Local reporters, . .	. 50 per month.
Locksmiths, . .	. 3 to 4 per day.
Lumbermen, . .	. 35 to 70 per month and found.
Lithographers, . .	. per piece.
Machinists, . . .	. 3.50 to 4.50 per day.
Machine planers, .	. 2.50 to 3 per day.
Men and their wives, .	. 50 to 65 per month and found.
Marble-cutters, . .	. 4 per day.
Marble-polishers, .	. 2 to 2.50 per day.
Masons, . . .	. 4 to 5 per day.
Mattressmakers, . .	. 2 to 3 per day.
Milkers and dairymen,	. 30 to 45 per month and found.
Millers, . . .	. 3 to 4 per day.
Millwrights, . .	. 3 to 5 per day.
Miners, . . .	. 2 to 3.50 per day and found, 40 to 65 per month and found.

Occupation.	Wages offered (gold).
Maltmakers,	$50 per month.
Nurses,	25 to 35 per month and found.
Ox teamsters,	35 to 75 per month and found.
Painters, house,	2.50 to 4 per day.
Pantrymen,	35 per month and found.
Paperhangers,	2.50 to 3.50 per day.
Patternmakers,	4 to 4.50 per day.
Picture frame makers,	2.50 to 3.50 per day and piece.
Pile-drivers,	2.50 to 3 per day.
Plasterers,	4 to 6 per day.
Plumbers,	3.50 per day.
Porters,	30 to 35 per month and found.
Potato diggers,	30 to 35 per month and found.
Printers,	45 to 80 per month and found.
Planers,	60 per month and found.
Quarrymen,	2.50 per day.
Stair-builders,	2.50 to 4.25 per day.
Stewards,	30 to 50 per month and found.
Storemen,	30 to 35 per month and found.
Street-sweepers,	30 to 35 per month and found.
Sugarpackers,	80 per month.
Stone-cutters,	4 to 5 per day.
Scourers,	30 to 60 per month and found.
Salesmen,	30 to 60 per month and found. Numerous applications.
Sawyers,	40 to 100 per month and found.
Sheep-shearers,	5 to 7 cents per head.
Shepherds,	25 to 35 per month and found.
Shipsmiths,	4 per day.
Sluicers,	1.75 to 2.25 per day.
Smelters,	60 to 120 per month and found.
Soapmakers,	35 to 40 per month and found.
Teamsters,	30 to 50 per month and found.
Teachers,	40 per month and found.
Tin roofers,	4 per day.
Tinsmiths,	3 to 4 per day.
Tracklayers,	1.25 to 2 per day and found.
Trunkmakers,	2.50 to 3 per day.
Turners,	3 50 to 4 per day.
Timbermen,	2 to 3 per day.
Upholsterers,	3 to 4 per day.
Undertakers,	80 per month.
Vineyardmen,	30 to 40 per month and found.
Varnishers,	2.50 to 3.50 per day.
Visemen,	2.50 to 3 per day.
Wagonmakers,	3 to 4 per day.

Occupation.	Wages offered (gold).
Waiters,	$20 to $40 per month and found.
Warehousemen,	2 to 3 per day.
Watchmen,	50 to 75 per month.
Well-diggers,	2.50 per day, contract.
Wheelwrights,	3 to 4 per day.
Wood-choppers,	40 to 70 per month and found.
Whipmakers,	3 per day.
Whitewashers,	3 per day.

In a recent copy of the *New York Herald* I find published the following table of the trades and rates of wages of mechanics, who found employment through the Castle Garden agency. These were emigrants, and the employment was furnished by the Board of Commissioners of Emigration:

Occupation.	Wages offered.
Apprentices, per week, without board,	$4 00 to $5 00
Barbers, per week, without board,	8 00 to 15 00
Bakers, per month, with board,	6 00 to 12 00
Bartenders, per month, with board,	10 00 to 18 00
Brushmakers, per day, without board,	2 50 to 3 00
Basketmakers, per week, without board,	10 00 to 15 00
Blacksmiths, per day, without board,	2 00 to 3 00
Brewers, per month, with board,	20 00 to 50 00
Bookbinders, per week, without board,	8 00 to 12 00
Bricklayers, per day, without board,	2 00 to 3 00
Brass finishers, per week, without board,	12 00 to 18 00
Boilermakers, per week, without board,	10 00 to 15 00
Butchers, per month, with board,	10 00 to 15 00
Cabinetmakers, per week, without board,	10 00 to 20 00
Coppersmiths, per week, without board,	12 00 to 18 00
Capmakers,	Piece work.
Cotton weavers, per week, without board,	8 00 to 10 00
Compositors, per week, without board,	12 00 to 18 00
Cooks, per month, with board,	20 00 to 100 00
Confectioners, per month, with board,	20 00 to 50 00
Carpenters, per day, without board,	2 50 to 3 00
Coopers, per week, without board,	12 00 to 16 00
Deckhands, per month, with board,	25 00 to 30 00
Druggists, per month, with board,	20 00 to 30 00
Dyers, per week, without board,	10 00 to 15 00
Engravers, per week, without board,	12 00 to 25 00
Florists, per month, with board,	15 00 to 25 00
Fresco painters, per week, without board,	10 00 to 15 00
Gardeners, per week, without board,	15 00 to 30 00
Gilders, per month, with board,	15 00 to ——

Occupation.	Wages offered.
Goldsmiths, per week, without board,	$12 00 to $18 00
Grocery clerks, per week, without board,	15 00 to 25 00
Hatters, per month, with board,	8 00 to 15 00
Horseshoers, per week, without board,	12 00 to 20 00
House carpenters, per day, without board,	2 50 to 3 00
Iron moulders, per day, without board,	3 00 to 3 50
Locksmiths, per week, without board,	12 00 to 18 00
Lithographers, per week, without board,	10 00 to 15 00
Machinists, per week, without board,	15 00 to 50 00
Masons, per week, without board,	12 00 to 18 00
Miners (coal), per day,	2 50 to 3 00
Millers, per day,	2 50 to 3 00
Painters, per month, with board,	15 00 to 18 00
Paperhangers, per week, without board,	10 00 to 15 00
Plasterers, per day, without board,	3 50 to 4 00
Plumbers, per week, without board,	10 00 to 16 00
Porters, per month, with board,	10 00 to 20 00
Printers, per week, without board,	12 00 to 18 00
Pianomakers, per week, without board,	15 00 to 20 00
Puddlers, per day, without board,	1 75 to 2 00
Ropemakers, per week, without board,	12 00 to 16 00
Saddle and harness makers, per week, without board,	12 00 to 18 00
Shoemakers, per week, without board,	8 00 to 15 00
Segarmakers,	Piece work.
Slaters, per week, without board,	12 00 to 16 00
Spinners, per week, without board,	10 00 to 12 00
Silk weavers, per week, without board,	10 00 to 12 00
Stonecutters, per day, without board,	3 00 to 4 00
Tailors, per week, without board,	6 00 to 10 00
Tinners, per month, with board,	15 00 to 18 00
Tinsmiths, per month, with board,	10 00 to 15 00
Turners, per month, with board,	12 00 to 18 00
Upholsterers, per month, with board,	10 00 to 15 00
Waiters, per month, with board,	12 00 to 30 00
Watchmakers, per week, without board,	15 00 to 18 00
Wagonsmiths, per week, without board,	12 00 to 16 00
Wine coopers, per month, with board,	20 00 to 30 00
Woollen weavers, per week, without board,	10 00 to 12 00
Wood carvers, per week, without board,	15 00 to 18 00

The *Public Ledger* of Philadelphia, in commenting on the above table, says: "Where the rates quoted include board and lodging, it is difficult to tell what the wages in money would be if board were not included. But excluding the few trades the rates of wages in which are thus stated, we find the average pay in the multitudinous industries represented, to be from $11.92 to $15.56 per week.

"But this includes the maximum wages of machinists, $50, which can be obtained only in exceptional cases, and it also includes in one class, trades which may be steadily pursued throughout the year, and those that must be suspended during stormy weather, and at certain seasons of the year. In the building trades, which are almost without exception subject to the latter vicissitudes, the workmen receive on an average from $14.77 to $19.11 per week. In the other callings, where work may be continued all the year round, the average wages are from $11.66 to $14.50 per week. From the first calculation fresco painters are omitted, and from the last machinists, because the pay in both trades is almost wholly dependent on the individual skill of the workmen, and nothing can be learned from the average rates in either. In any such broad classification as the above, trades and professions requiring varying amounts of special study and skill are necessarily grouped together, but the classification is useful as showing the tendency to equalization of wages, which arises under the natural laws of trade and business."

The Bureau of Statistics gives the following figures as representing the average rates of board in the several cities named in 1869.

Board in San Francisco, . . .	Per week,	$6 55	(gold).
" New York, . . .	"	4 50	(currency).
" Philadelphia, . . .	"	4 40	"
" Baltimore, ...	"	4 00	"
" Boston, ...	"	4 70	"
" the United States, average, exclusive of Territories, .	"	4 80	"

The average percentage of increase in daily wages paid for mechanical labor in the United States, in the year 1869 over 1860, except for the Pacific States and Territories, was 45; in this increase drug clerks shared to an equal amount.

From the statistics here presented it will be seen that drug clerks are reported as receiving from $20 per month with board to $20 per week without board, and between these extremes may be found men of every shade of ability, and even these figures do not represent the greatest extremes. The highest sum I have known to be paid was $2100 per year, and the lowest $500, and this for graduates in pharmacy, or men equally skilled and fully competent to take charge of a first-class business. Locality, age, fitness or unfitness, will modify, one way or the other, in almost every case, the question of compensation between employer and employed, and he who would obtain the highest reward must aim at the highest excellence in his profession, both as a pharmacist and man of business, which is quite as indispensable as a scientific knowledge of pharmacy and its collateral branches. The same remarks as to compensation will apply to most of the trades and professions unless they are governed by trades-unions.

Taking the average weekly compensation of the drug clerk in New York without board at $17.50 per week, it will be found that he received less than workmen in fifty-six other occupations, about the same as workmen in five others, and more than those in fifteen others, this by comparing the wages given of the eighty-eight trade societies in New York, in 1869, in the table above given.

Now taking into consideration the fact of less compensation and 21 per cent. more time given to labor during the week, it may be assumed that the drug clerk earns 30 per cent. less in the year than two-thirds of the community in which he resides of equally skilled men in their respective occupations.

PHILADELPHIA, August, 1874.

ON HYDROMETERS FOR SPECIAL PURPOSES.*

BY W. H. PILE, M.D.

IN the laboratory it is often found useful, as well as economical, to employ hydrometers with the scales containing only a single mark; this mark to indicate the density of some particular solution in course of preparation. Having had some experience in making such instruments, and not finding any given directions for that especial purpose, I offer the following paper as a small contribution, which may perhaps prove serviceable to some one engaged in chemical pursuits. I was drawn to the subject by being requested to mark a line on a hydrometer to indicate the density of acetate of lead used by dyers while being evaporated down, so that when cold it would assume that peculiar crystalline texture which it is desirable it should possess. This density was about 2.5 specific gravity, and not being able to procure a liquid so dense, after some consideration the difficulty was surmounted in the manner which I shall now endeavor to describe, and which method will be equally applicable to mark any density, however great.

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* Read at the Sixth Session.

Within the stem of an empty glass hydrometer, fasten by means of gum tragacanth paste, a slip of paper with a line previously drawn on it, as well as the density which it is required to indicate. Now float the hydrometer in pure water of 60° F. temperature, and drop in mercury or shot until the line on the paper exactly coincides or cuts the surface of the water; dry the hydrometer and weigh it carefully. The total weight thus ascertained is evidently the weight of the water displaced by the floating glass. Now it will be readily understood that if the glass was immersed in another liquid having twice the gravity of water it would not sink to its former depth, and in order to depress it to that mark an additional amount of mercury or shot must be added, so that its total weight would be exactly doubled.

From this consideration it becomes evident that, in order to determine the required weight of the hydrometer when finished, it is only requisite to multiply the weight as at first ascertained by the specific gravity which it is required to indicate. The product will be the exact weight, to which, by the addition of mercury or shot, the hydrometer must be made to equal. It will be observed that when the indication is required for a liquid lighter than water, the product by the above rule will be less than the original weight, and consequently a portion of the mercury or shot must be withdrawn.

A small fragment of sealing-wax should now be melted in the neck of the hydrometer, and finally the stem hermetically sealed. Where the instrument is required to be very exact or delicate the stem should be small in diameter, while the bulb should be large in proportion.

AN ESSAY ON GRANULAR EFFERVESCENT PREPARATIONS.*

BY RICHARD V. MATTISON.

With feelings of considerable hesitation we accepted Query 39, while in attendance as delegate to the meeting of this Association, in Richmond, last September, but being fully aware that for several years past there has been a growing interest in this class of medicinal preparations, and realizing the fact that but few even of our most intelligent pharmacists have appreciated the certainly obvious advantages offered by combining medicines in this form, at once the most agreeable to both the eye and palate, we present these few remarks hoping it may prove the means of better introducing this class of remedies to the notice of the profession and trade.

Regarding their preparation few remarks are necessary, this and many other processes having been published frequently during the period extending from their introduction, about fifteen years ago, until the present date.

The following is an outline, however, of the process of one of our leading manufacturers, whose preparations are found in almost every State in our Union.

Equivalent quantities of tartaric or citric acids and monosodic or potassic carbonates are mixed with a small quantity of sugar and the requisite amount of chemical desired, *e.g.*, citrate magnesium or lithium, and the whole powdered and mixed thoroughly, then moistened carefully with a quantity of absolute alcohol, and either pressed through sieves while still moist, or allowed to dry in a mass by being placed upon a wooden tray in a close room heated to a temperature of not above 70° C. This mass is then broken apart and passed through a sieve of say six meshes to the inch into another sieve of about twenty meshes, where all the finer particles are separated and reserved for a subsequent operation.

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* The discussion on this paper will be found in the minutes of the Fourth Session.

In the practical working of this process care must be observed in several particulars, the most important of which, however, is to have the alcohol perfectly pure. If this is not attended to, and any fusel oil should contaminate the alcohol, the dried salt, upon being added to water, will develop a slight but disagreeable odor of amylic alcohol, which may not be noticed, however, unless the person is familiar with it. This may be noticed in quite a number of English preparations at present in our market.

A gentleman who claimed to know reported to us some years ago that benzol or benzin was used by foreign manufacturers upon account of its freedom from water. This was tried in a number of experiments but failed, as the writer was unable to procure either benzol or benzin which would not leave traces of its odor when the salt was dried.

Another difficulty of this process is that of obtaining salts of a snow-white color, unless working with large quantities, without great care is used. We do not think granular salts can be made successfully in a small way, hence it is that very few manufacturers make them successfully in operating on a few pounds or more at a time; the salts are lacking in that snowy whiteness and beauty of granulation that characterize the products of larger manufacturing houses. Of course the medical and pharmaceutical professions will not patronize an inferior grade of preparations; and a new firm, without the determination of furnishing superior articles, and the counter-determination of not selling an inferior one, cannot succeed.

The writer of this essay, as a manufacturer, has thrown several hundred pounds of prepared salts into the sewers because they were not up to the standard, and a loss of money was deemed of less value than a loss of reputation in connection with these products.

This loss, until a fair trade is established, is to be greatly regretted, as it often cripples a young firm with small capital, and obliges them to relinquish the business when otherwise they would be successful. A dozen firms in this country, I think, can be mentioned who have attempted, partially succeeded, and finally relinquished the manufacture of these valuable preparations.

For beauty, solubility, and effervescent properties, until a year or more past, the English salts led the market; but unfortunately, for utter unreliability, chemically and therapeutically, they have also stood highest.

In this connection we will notice the recent prosecution of a druggist in England for selling the granular citrate of magnesium, which contained no magnesium salt, by the way, and his conviction under the provisions of the Adulteration Act. This brings to light many circumstances which should be familiar to the profession in America.

The case was the rather noted one of Mr. McDermott, of Bermondsey, in October last, who was prosecuted, convicted, and fined £10, for filling a physician's prescription for four ounces of granular citrate magnesium with a salt containing no magnesium.

A few days after that, November 5th, a pharmaceutical meeting was held, at which most of the trade were represented, and the subject freely discussed; most manufacturers concluding to change the orthography of their labels to read "citro-tartrate of soda with magnesia and sugar, formerly known as citrate of magnesia," or to "granular effervescent citrate, known by the public as citrate of magnesia." In the course of the discussion the oldest and leading English manufacturer, Mr. Alfred Bishop, remarked (see *Pharmaceutical Journal*, Nov. 8th, 1873) that "he was very sorry he ever made the mistake of calling the article citrate of magnesia, although it really did contain magnesia, from which it took its name."

A few weeks later he tries to defend the action for which he was so sorry, in a letter to the *Pharmaceutical Journal*, in which he says his preparation contains sulphate of magnesia, which is converted by some hocus pocus into citrate during the effervescence. This is obviously so incorrect that we pass it without further notice, excepting to point out what subterfuges manufacturers will sometimes invent to cover their deception.

For the pros and cons of this subject the reader is referred to the *Pharmaceutical Journal* and *Chemist and Druggist*.

The *Tennessee Pharmacal Gazette*, commenting upon this subject in February of this year, speaking of Mr. Bishop's preparation unintentionally, as it afterward acknowledged, threw a halo of doubt around the preparations of other manufacturers, by declaring that "it was certainly a severe and unjust punishment, as no one who knows expects the granular citrate of magnesia to contain more than traces of the *sulphate* (italics ours), which is added for its effect on the conscience of the manufacturer." Not stopping to inquire what effect the substitution of Epsom salt and the sale of it for citrate of magnesium would have upon the conscience of any one, we notice an editorial in the *Chicago Pharmacist* from which we quote.

"If we as pharmacists must sell and dispense this class of preparations let it be to our credit that we supply only such as have not merely a claim to the name, but are really so in composition. . . . In justice to those whose productions are as represented, and who are placed in the same category as those that palm the fraudulent article upon the market, we have investigated a number of specimens of this preparation, with the following results:

Name of manufacturer.	Locality.	Result, containing
Alfred Bishop, ...	London, England,	Epsom salt.
Herring & Co., ...	“ “	“
John Bell & Co., ...	“ “	“
Hoffman & Co., ...	“ “	“
Webber, ...	“ “	“
Southall, Son & Dymond, .	Birmingham, Eng.	Citrate magnesium.
R. B. Ede & Co., ...	London, England.	No trace of magnesium.
J. C. Ford, ...	“ “	“ “

Name of manufacturer.	Locality.	Result, containing
Keasbey, Mattison & Rutter,	Philadelphia.	Citrate magnesium.
Charles Ellis, Son & Co., . .	"	" "
Hance Bros. & White, . .	"	" "
J. R. Nichols & Co., now Billings, Clapp & Co., . .	Boston.	Epsom salt.
Hanbury, Smith & Hazzard,	New York.	"
To which we will add		
Peter Squire, ...	London, England.	"
Cox, Gould & Co., ...	" "	"
Savory & Moore, ...	" "	"
T. Morson & Son, ...	" "	"

"The above table tells its own story."

To the credit of American manufacturers, who have been taunted with not making this class of goods as reliable as their English neighbors, let it be said that of five brands at present to be found in this market, three of them were citrates of magnesium honestly prepared, while of the twelve English brands only one contained citrate of magnesium.

That one deserves special mention from this fact. At the meeting of the Pharmaceutical Conference of Great Britain, held at Dundee, Scotland, on Tuesday, September 3d, 1867, just seven years ago, Mr. George Dymond brought before the Conference his views on the subject of granular citrate of magnesia, deeming it a departure from the first principles of sound morality, and showing how pharmaceutists set those principles at defiance by the practice of selling Epsom salt for citrate of magnesium. To his honor be it said that he utterly discountenanced anything of the kind. At this juncture we point with national pride to the fact that Albert E. Ebert, the former president of this Association, who attended the meeting referred to, upheld Mr. Dymond in his remarks, and stated that he had made an effervescent mixture, which he had designated as "granular effervescent aperient," not citrate of magnesium. Mr. Dymond died a few months ago, and the firm name since July 1st has been Southall Bros. & Barker.

A few more remarks and I will close, regarding granular citrate of magnesium. There is no doubt but what it in time will completely replace the officinal solution. Its advantages are many to the consumer; among them may be mentioned that it is more palatable, convenient, and economical.

Potassium Bicarbonate, when administered in this form, is rendered more palatable, in fact, simply delicious to a feverish patient, with the refrigerant action much increased.

Lithium Salts are thus divested of their tendency to disturb the stomach and relieved of their nauseous taste.

Cerium Nitrate has afforded the happiest results in the sickness of pregnancy, controlling the vomiting when most other remedies fail. The result here is mostly due to the action of the carbonic acid on the stomach, producing partial paralysis of the nervous system.

Pepsin Combinations are given in this form with peculiar advantage, allaying all irritation of the stomach. The use of these preparations is attended with the most gratifying results.

The mineral water salts are in many cases superior to the waters themselves. Care should be exercised in their preparation; for instance, Vichy salt is found in the market of acid reaction: the Grand Grille Spring is a carbonate alkaline water, its medicinal effect chiefly depending upon the amount of sodic carbonate contained in it. It is mostly used as an antacid, and in rheumatic and gouty disorders where the alkaline treatment is deemed necessary.

We would call attention to the formula of a granulated effervescent Vichy salt proposed by Mr. Charles L. Mitchell in the *American Journal of Pharmacy*, February, 1873, in which 10 ounces of citric acid are used with 7 ounces of monosodic carbonate; this would produce a very *acid* salt. It would be much better to use 12½ or 13 ounces of the sodium salt. We notice that a large quantity of sugar is used; this should be excluded, as it makes the salt very disagreeable in taste. The amount of iron in the formula quoted is also in excess, as the real amount of ferrous carbonate contained in the water in 1000 cubic centimetres is only 0.4 gramme. We would say to the author not to be discouraged. Try again, but before doing so consult "Hager on the Manufacture of Artificial Mineral Waters." Kissingen, Seltzer, Carlsbad, Pullna, Congress, Friedrichshall, etc., are successfully imitated, while the facility with which Crab Orchard salt is procured renders such a course unnecessary, though it could probably be done with advantage, thus increasing the aperient power.

These mineral water salts deserve notice also from the fact that when used at the soda water fountains to prepare the various artificial mineral waters, they are convenient and economical, besides furnishing with the extended sparkling effervescence a much more refreshing drink than can be procured from a simple solution of the medicinal salts impregnated with carbonic acid gas.

Mineral waters are sold more largely every year, and the "granular effervescent salts" are destined to fill an important and profitable niche in the business of our retail pharmacists, besides meeting with an extensive use by our leading physicians, as they readily appreciate the fact that it offers them their favorite remedies in the most efficient, and at the same time most palatable forms. Such being the case it becomes a matter of interest to the pharmacist to keep none but the best, and we would suggest the most advisable way to satisfy one's self of the honesty of the manufacturers is by means of old and tried friends that never desert in an emergency, viz., chemical reagents. This should be practiced, more particularly in the case of magnesium citrate than any other, as there is more direct temptation to fraud.

PHILADELPHIA, August 3d, 1874.

ON POWDERED BLUE MASS.*

BY J. F. HANCOCK.

QUERY 8.—Powdered blue mass. What is an easy and convenient mode of preparing a mercurial powder to fully represent the officinal blue pill?

IN some localities the blue pill of the Pharmacopœia is largely used in form of powder, and its advantages in some cases are obvious. The powder is especially appropriate for administration to children. In the absence of officinal directions various methods have been devised. The most common practice known to the writer is that of treating the blue pill mass with water until all soluble matter has been removed. That which remains on the filter is dried, and sufficient powder of licorice root, elm, or sugar of milk, to make up the original weight. My experience with the above method has not been satisfactory. 1st. Because the trace of oxide which is said to be found may be lost to some extent. 2d. The process is unnecessarily troublesome and expensive. In the United States Dispensatory it is stated "that the precise condition of mercury in blue pill is uncertain. A portion is not chemically altered. Some maintain that all the metal is in this state, others contend that a trace of protoxide is formed, and that this is the activity of the pill." The supposed oxide is attributed to the air acting on the surface of the divided metal. If the mercury is not converted into protoxide by trituration, there can be but little doubt that it is oxidized by exposure.

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* The discussion on this paper will be found in the minutes of the Fourth Session.

The objections to the processes named induced the writer to devise an improved formula for making pulv. mercury to represent the officinal pill. The following has been used with entire satisfaction for several years, and the ease with which it may be made and its economical production, commends it for general adoption:

PULV. HYDRARGYRI.

(Corresponding to pilula hydrargyri, U. S. P.)

Take of	Mercury, ...	384 grains.
	Granulated Sugar, ...	sufficient quantity.
	Syrup, ...	" "

Mix the mercury with 200 grains of the sugar, and add sufficient syrup to form a paste with the mercury, and continue the trituration until the globules of mercury have all disappeared. Then place the mortar with the powder in a dry room, and expose to the air with occasional stirring, until the moisture has been dissipated; then add sugar until the powder weighs 1152 grains. Continue the exposure in dry air with occasional stirring for the space of ten days, when the powder is ready for use.

The object of exposure for ten days is to allow the gradual formation of protoxide, upon which its virtues are supposed to depend.

PHOSPHORETTED RESIN.*

BY W. H. PILE, M.D.

In the January number of the present year of the *American Journal of Pharmacy*, appeared an article by Mr. A. W. Gerrard, teacher of pharmacy in the University College Hospital of London, on a new compound which he termed phosphoretted resin, and which he described, together with its mode of preparation and formula for its pharmaceutical employment. I have, following the method of Mr. Gerrard, made considerable quantities of the article, and have also dispensed it in various forms; believing it to be an eligible mode of administering phosphorus. I would call the attention of the Association to it, and invite an examination of samples. In following the method of Mr. Gerrard I would urge particular attention to the directions given, especially in observing caution while shaking it when in a melted state, glass vessels being ever liable to fracture when not expected; this I have found out to my cost. The author has remarked as a singular fact, that the preparation when remelted assumes a diaphanous appearance, resembling porcelain of a whitish color, and which he attributes to a change in its molecular arrangement. In my experience, perhaps owing to the character of the resin employed, which was the pale transparent variety, of the highest grade, the phosphoretted resin has invariably assumed this appearance immediately upon cooling when first made, and which it retained with the exception of gradually becoming darker in color when exposed to the light, a change, however, which is merely superficial.

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* Read at the Sixth Session.

ON SOLUTION OF QUINIA FOR HYPODERMIC INJECTION.*

BY A. P. SHARP.

QUERY 16.—What is the most desirable solution of quinia for hypodermic injection?

IN reply to the above query the writer will say that being aware of the serious objections to all the solutions of quinia heretofore used for hypodermic injections, owing to their irritating effect, thereby producing ulcers and ugly abscesses, his aim has been to obtain one that he could fully recommend after a fair trial. With this view numerous experiments have been made, and among them was a solution of the salt in tribasic phosphoric acid, which is known to have little or no corrosive properties, yet after a trial at one of our hospitals the same trouble occurred by the use of this solution as had occurred with the bromide and other solutions. As the pain and other bad effects produced have been attributed to the free acid, and as all experiments lead to the conclusion, that no neutral solution could be obtained, the natural inquiry is, what acid would produce the least irritation, make a perfect solution, and assimilate with the blood? As it is a well-ascertained fact, that lactic acid is found in the secretions of the body, and exists in the juices of the flesh, also that it possesses no corrosive or irritating properties, I propose two formulas, using lactic acid as the solvent of the quinia, and differing only in the preserving agent employed to prevent the usual organic change taking place in such solutions, hoping they may prove less objectionable than many others that have been employed. To prevent the change above spoken of, it will be observed, that alcohol has been introduced in the solution numbered one. Sulphurous acid has long been known to possess the quality of preventing or at least retarding such changes, and Prof. Johnson of Baltimore having successfully used it for the purpose in the solution of morphia, I have borrowed the idea, and obtain it in the free state in formula numbered two, by the introduction of bisulphite of sodium, the decomposition resulting in the formation of no objectionable salt. Solutions so preserved have kept for months apparently without the least change.

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* Read at the Third Session.

As the original query called for a solution containing thirty grains to the sixty minims, I will say there is no difficulty in obtaining such a solution, but as the acid is presented in a more concentrated form in such, and being informed by those who use hypodermic injections, that fifteen grains is all that is required, I propose that as the maximum strength. It can easily be diluted if desired. Specimens of each solution are on the table.

Formula No. 1.

Take of	Quinia Sulphate, ...	15 grains.
	Lactic Acid (concentrated), . . .	15 minims.
	Alcohol, ...	20 "
	Water, sufficient to make	60 "

Rub the quinia to a fine paste with a portion of the water, add the acid and alcohol, and when the solution is perfect, the required water to measure sixty minims.

Formula No. 2.

Take of	Quinia Sulphate, ...	15 grains.
	Lactic Acid (concentrated), . . .	15 minims.
	Water, sufficient to make	60 "
	Bisulphite of Sodium, ...	½ grain.

When the solution is perfect, transfer to a well-corked vial, and add the bisulphite of sodium.

PREPARED CASTOR OIL.

BY CLAY W. HOLMES.

HAVING tried all the methods advised by different writers for disguising the taste of castor oil, and feeling that a mode was possible which would neither conflict with elegant pharmacy or its action on the human system, I set about a series of experiments. The final result of my labors is herewith presented to the members of the Association, with the statement that the formula in all its bearings is entirely original with me, never having seen anything of the kind anywhere.

℞. Pulv. Gum. Acaciæ,	℥j.
Syrupi,	
Glycerinæ,	āā f℥j.
Aquæ,	f℥iij.
Ol. Ricini,	f℥vj.
Ext. Vanillæ,	
Sp. Vini Gal.,	āā fʒij.
Olei Cinnam., true,	gtt. v.

Misce secundum artem.

This gives an elegant, permanent emulsion, representing fifty per cent. of castor oil, and with the dose doubled, has the same happy effect as the natural oil.

I have sold large quantities of it during the past year, and in every instance have heard good reports from it. In numerous instances children, who could by no means be induced to take the plain oil, have taken this preparation without the least hesitation. I have watched its systemic effects closely, experimenting in my own family, that I might be satisfied of its worth before recommending it to my patrons. The result justifies me in offering it for the good of the craft, hoping all who try it may find it as worthy of favor as I have.

WILKESBARRE, PA., Sept. 1st, 1874.

ON EXTRACT OF QUASSIA.*

BY JOSEPH S. WHALL, PH.G.

QUERY 13.—What is the relative quantity of extract of quassia, prepared with water, and prepared with dilute alcohol?

THERE seems to be a great diversity of opinion as to the amount of extract of quassia yielded to water and diluted alcohol sp. gr. 941 = 19° B. Reference is made (in the United States Dispensatory, 1860, page 1105) to the amount as given by M. Recluz, he stating that from sixteen ounces of quassia he obtained seven drachms of extract by infusion in water, and from the same amount of quassia by maceration in alcohol sp. gr. 941 = 19° B., two ounces five drachms and a half of extract. Wood and Bache add, in the same paragraph, that they think some mistake was made in the tables of the Dictionnaire des Drogues from which they quote.

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* Read at the Second Session.

It is stated (in Parrish's Practical Pharmacy, Wiegand, page 653) in a table taken from Squire's Companion to the British Pharmacopœia, that sixteen ounces of wood yielded seven drachms of extract, and one ounce of extract was obtained from forty-eight ounces of wood by the process of the British Pharmacopœia. This certainly seems as if some mistake had been made.

The process for the preparation of extractum quassiæ is the same in the United States Pharmacopœia and British Pharmacopœia, with the exception that the British Pharmacopœia directs the powder to be macerated with a portion of the menstruum for twelve (12) hours before the percolation, and evaporating the filtered solution. The United States Pharmacopœia percolates without a previous maceration (which is of no practical use), and strains the partially evaporated solution, and then evaporating to the proper consistence by means of a water-bath. The *modus operandi* of the process as pursued by me for the preparation of the extract was as follows: Twelve (12) troy ounces of quassia in very fine powder was taken, the powder moistened with six (6) fluid ounces of the menstruum, packed very firmly in a conical percolator, and the percolates as they percolated were reserved in portions of eight (8) fluid ounces each until forty-eight (48) fluid ounces, or three pints, had percolated, which quantity will thoroughly exhaust the drug within practical limits. These quantities were reserved, with the exception of two (2) trial portions of twelve (12) troy ounces each, of quassia, one portion of which was percolated with diluted alcohol to six (6) pints, or ninety-six (96) fluid ounces, and the other portion was percolated with water to six (6) pints, or ninety-six (96) fluid ounces. The last forty-eight (48) fluid ounces, or three (3) pints, from each percolate yielded so little solid extract, I did not think it was worth the time and trouble that would be necessary for obtaining, it amounting to only a few grains of extract. The diaphragm used was lint, and if the percolation was too rapid checked by inserting a cork in the nose of the percolator. In each of the percolations where water was used as a menstruum, the powder absorbed about two and one-fourth (2¼) pints before the percolation began; when diluted alcohol, about two and one-half (2½) pints, absorbing more menstruum, I think, than any other drug before the percolation commences. A maceration of twenty-four (24) hours at the commencement of the process I did not find to be of any value. The specific gravities of the percolates were taken by use of the hydrometer, the temperature being 60° Fahrenheit.

Specific Gravity Tables.

Portions of Percolates. ½ pints.	No. 1. Quassia. 12 ℥ Troy. Menstruum, Water. Sp. Gr. 1.000.	No. 2. Quassia. 12 ℥ Troy. Menstruum, Water. Sp. Gr. 1.000.	No. 3. Quassia. 12 ℥ Troy. Menstruum, Water. Sp. Gr. 1.000.	No. 1. Quassia. 12 ℥ Troy. Menstruum, Dil. Alcohol. Sp. Gr. .941.	No. 2. Quassia. 12 ℥ Troy. Menstruum, Dil. Alcohol. Sp. Gr. .941.	No. 3. Quassia. 12 ℥ Troy. Menstruum, Dil. Alcohol. Sp. Gr. .941.
1	1.007	1.008	1.008	.959	.958	.960
2	1.005	1.004	1.004	.947	.945	.948
3	1.003	1.002	1.001	.945	.942	.946
4	1.002	1.000	1.001	.942	.941	.943
5	1.000	1.000	1.000	.941	.941	.942
6	1.000	1.000	1.000	.941	.941	.941
7	1.000	....	....	.941	...	...
8	1.000	....	....	.941	...	...
9	1.000	....	....	.941	...	...
10	1.000	....	....	.941	...	...
11	1.000	....	....	.941	...	...
12	1.000	....	....	.941	...	...

The weighings of both menstrua and percolates were done in a flask marked in the narrow part of the neck, both at the same temperature. The rate of exhaustion by weight is shown by reference to the following tables:

Tables of Weight.

Portion of Percolates. ½ pints.	No. 1. Quassia. 12 ℥ Troy. One fluid ℥ Menstruum Weighs 456.4 grs.	No. 2. Quassia. 12 ℥ Troy. One fluid ℥ Menstruum Weighs 456.4 grs.	No. 3. Quassia. 12 ℥ Troy. One fluid ℥ Menstruum Weighs 456.4 grs.	No. 1. Quassia. 12 ℥ Troy. One fluid ℥ Menstruum Weighs 431 grs.	No. 2. Quassia. 12 ℥ Troy. One fluid ℥ Menstruum Weighs 431 grs.	No. 3. Quassia. 12 ℥ Troy. One fluid ℥ Menstruum Weighs 431 grs.
1	459	460	460	439	439	441
2	458.5	458	458	434	432	433
3	458	457	456.5	432	431	432
4	457	456.5	456.5	431	431	431
5	456.5	456.5	456.5	431	431	431
6	456.5	456.5	456.5	431	431	431
7	456.5	....	....	431	...	...
8	456.5	....	....	431	...	...
9	456.5	....	....	431	...	...
10	456.5	....	....	431	...	...
11	456.5	....	....	431	...	...
12	456.5	....	....	431	...	...

After forty-eight (48) fluid ounces had percolated, the six percolates were evaporated to about twelve (12) fluid ounces, this solution was then strained and the evaporation finished upon a water-bath; obtaining from the aqueous extracts in their order as in the tables, first, one hundred and eighty-five (185) grains, with the addition of twenty (20) grains obtained from the second forty-eight (48) fluid ounces, giving in all two hundred and five (205) grains; the second one hundred and eighty-four (184) grains, and the third one hundred and ninety (190) grains. From the alcoholic extracts the yields were, from the first, two hundred and five (205) grains, with the addition of twenty-five (25) grains obtained from the second forty-eight (48) fluid ounces, giving in all two hundred and thirty (230) grains. The second yielded two hundred and twelve (212) grains, and the third two hundred and ten (210) grains. From these results it may be seen that the yield of the alcoholic extract is a little larger than the aqueous, and in my opinion it more nearly represents the drug, besides affording a better-looking extract, one that will keep well, and possessing the aroma (if it may be so called) of quassia.

Samples sent of alcoholic extract and of United States Pharmacopœia extract.

ON SUPPOSITORIES.*

BY GEORGE W. KENNEDY.

QUERY 19.—What are the advantages of making suppositories by *moulding* over the method of making them by *hand?*

I KNOW of none.

On the contrary there are advantages by the *hand*-making process over the moulded.

The advantages are:

1st. Avoiding delay of melting and cooling.

2d. Doing away with all foreign ingredients, which are often used for the purpose of giving the cones a greater degree of firmness, and also to hasten their preparation.

3d. It insures a more thorough and perfect distribution of its ingredients, which is almost impossible to be obtained by moulding. For instance, you have a prescription containing some medicinal ingredient having a heavy specific gravity and insoluble in melted cacao butter, such ingredients will naturally fall to the bottom of the vessel in which it is moulded; thus making it quite difficult to have the medicament equally divided, even by the most skilful and careful pharmacist.

4th. Avoiding loss of volatile ingredients, which does not occur when made by hand—*e. g.*, iodoform, etc.

5th. When solid extracts, or other solid medicines, are to be added, it is necessary first to make them into solutions if possible, and if water is used for that purpose, great care is required as to the quantity used, otherwise the suppository will break when being taken from the moulds. Another objection is, it renders the suppositories very liable to become mouldy if kept any length of time. This is particularly observed if any of the English extracts are used.

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* Read and discussed at the Second Session.

6th. Suppositories containing carbolic acid, if the acid and cacao butter are melted together, will not solidify on cooling without the addition of wax, or something of the same nature, while I hold that it should be cacao butter alone. Having experienced considerable trouble in making suppositories of this character, especially in getting them out of the moulds, injuring the moulds to such an extent so as to unfit them for further use, I was induced to try the hand-making process, which gave such satisfaction that I now make all suppositories by hand, and find it a great advantage over the process by moulding.

7th. When made in moulds they frequently break in getting them out, thus causing considerable delay and trouble.

8th. I would dispense with all kinds of moulds (that I am familiar with) in their manufacture.

9th. The satisfaction it gives the pharmacist of knowing that it is utterly impossible for any separation or subsidence of any of its ingredients, which certainly cannot be felt when the substance is melted and moulded.

ON COSMOLINE.*

BY JOSEPH L. LEMBERGER.

In answering the query intrusted to me, I should probably fail in gratifying the expectations of the Association, and would also feel that a duty to all concerned had not been properly discharged, did I not to some extent diverge from the naked question, and inquire first into the character of "cosmoline" itself.

Dr. A. W. Miller, of Philadelphia, has endeavored to settle the question as to what the article called "cosmoline" is, or might be considered as being, in a series of articles read before the pharmaceutical meetings of the Philadelphia College of Pharmacy during the past year, and the result of his experiments seems to have convinced him that it is simply an ointment of paraffin, made with the so-called neutral oil of the refinery and paraffin.

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* The discussion on this paper will be found in the minutes of the Third Session.

Knowing that the manufacturers claim much painstaking in its preparation, and the writer desiring to satisfy himself that he was not aiding the cause or principle of empiricism in what he might write or say on the subject, determined upon a visit to the works of E. Houghton & Co., Philadelphia, to witness, if possible, the manufacture of cosmoline; and with much courtesy on the part of the gentlemen connected with the firm, he was freely accorded this privilege as a representative of the American Pharmaceutical Association.

We learn from them, that not all the petroleum oil produced at the wells is alike suited for the production of "cosmoline," or, as they prefer terming it, "the most efficacious principle or virtue from petroleum." "Petroleo virtis validissima."

From the time the oil leaves the well no chemical agent is used. The refining of the oil cannot be conducted within the city limits, so that part of the process was not seen; it is performed under their direction distant from Philadelphia, but was assured by them, with a promise of a sworn certificate if desired, that it is done, without the use of chemicals of any kind, by means of slow distillation and manipulation with superheated steam. As thus prepared, it is received at the works and further purified by means of ingeniously arranged percolation through animal charcoal at a temperature of 120°, requiring great skill and assiduous attention day and night in managing this part of the process.

There is no doubt in my mind, nor do they make a secret of the fact, that paraffin as a natural product of petroleum, exists in the article, and they give a uniform consistence to the resulting product by adding a certain percentage of paraffin, to bring it to what they consider a regular medical standard. As thus prepared and exhibited, it is a perfectly bland and apparently simple and harmless substance, and from a number of experiments proves to be much that is claimed for it, viz., an elegant healing agent (barring a slight smell of petroleum in its native condition).

It is freed of all the irritating properties of petroleum, is said to be an undecomposable body, and the fact was brought to the notice of the writer, that it is impossible to produce spontaneous combustion with it, but when mixed with cotton or woollen waste the thermometer invariably falls. If the fact is well established, however, that vegetable oils only produce spontaneous combustion, no particular claim ought to be attached to this point. The writer is not as enthusiastic on the subject as the manufacturers are, yet having now learned this much about its physical properties we come to the text proper of Query 26.

There is a petroleum product called "cosmoline," having claims to considerable merit. Can its claims be established by experience, and to what pharmaceutical uses can it be put?

In order to learn whether its claims are merited in whole or in part, the co-operation of a number of physicians was invited, and the results were gratifying in most of the cases treated. A number of cases of various forms of skin affections were treated; among them skin poisoning by wild parsnips and poison-vine; in one very severe case the topical application of the plain cosmoline was followed by immediate relief. In several the result was not so well marked, but have since learned that the addition of a small quantity of camphor, which it readily dissolves, increases its curative properties very materially in this form of disease.

I have had excellent opportunities for having the cosmoline virtues tested in burns and scalds, and in such cases do think and freely declare that it is without a superior, never failing, when a timely application of the remedy was made, even in instances when so large a portion of the body was involved in injury as to leave a doubt with the physician whether any hope could be extended to the sufferer. It completely protects the parts, and acts so promptly as nature's assistant, that I consider it a very valuable addition to our catalogue of remedies.

One case of a little girl, involving the neck, chest, axilla, and arms, the burns very deep, and the case considered a critical one, with hope for recovery very doubtful; nothing was used in treatment but plain cosmoline, and the patient is now entirely well, with very little contraction of the parts. Another of a boy scalded at a rolling-mill, where the injury involved the abdomen, thighs, and adjacent parts, nothing was used but the plain cosmoline, and the patient recovered speedily. Another, where a young man, subject to epileptic fits, fell against a red-hot stove, and in the absence of any other person in the room, roasting in that condition for ten or fifteen minutes, involving a large part of the fleshy portion of the thigh, inflicting a deep burn equal to ten by ten inches; he was treated entirely with cosmoline, and is well. A case of injury by caustic soda, involving the arms and hands, and very similar to a scald or burn, yielded promptly to its soothing and healing influence.

An opportunity was afforded the writer to try its virtues as a remedy for a chronic case of tetter, the patient alleging that she had been to all the physicians in her neighborhood, had also tried all the advertised nostrums accessible; the carbolated cosmoline, containing 3 per cent. of acid carbolic, was used, and in a short time the patient reported it the very best thing she had ever used, and was nearly well, not having quite used up a 3½-ounce bottlefull.

It was found very efficacious in chafing of infants and adults, healing the chafed parts very promptly. A severe injury with a broken glass bottle, involving the fleshy part of the hand, was healed in a few days by the plain cosmoline.

A case of tinea capitis (scald head) yielded very promptly to the use of plain cosmoline after a poultice had been applied.

Excoriated nipples, a much-dreaded trouble with mothers, have been speedily healed, and on account of its simple blandness no possible injury can be inflicted upon the child nursing.

I have heard it named, by one who suffered severely, as the very best remedy for frosted limbs.

It has also been found very serviceable in piles, and I believe it to be an excellent base for the administration of the usual remedies, tannin, opium, etc.

It has also been taken internally in teaspoonful doses for soreness of the bowels, after a severe attack of dysentery, and our informant declares that relief speedily followed.

The *fluid* cosmoline has also received attention; it is not so concentrated, but seems to have all the virtues. It has been used by injection for gonorrhœa, acting very promptly, especially when holding a small portion of tannin in suspension—three to five grains to the fluid ounce. Most troublesome cases of this disease have yielded in from two to five days.

It has also been used with success in certain female diseases. Profuse leucorrhœa, a recent case, was treated very satisfactorily with cosmoline injections, and we are informed by the manufacturers that they have sold considerable fluid cosmoline to physicians making female diseases a specialty.

To what pharmaceutical uses can it be put?

Cosmoline, it is alleged, has no affinity for oxygen, being free from acids, and consequently never becomes rancid. This feature, in connection with its remarkable healing properties, commends it for use as a base for ointments.

The manufacturers exhibit it in several forms, the plain cosmoline, cosmoline cerate, with a greater proportion of paraffin or white wax, and cosmoline substitute for lard. The latter it is expected by them will meet the objection of high price advanced by the writer and others last year; it is furnished now in large quantities as low as forty-five cents per pound, and is composed of plain cosmoline with a fraction of wax, what percentage I have not learned. This will certainly be the most popular for general pharmaceutic use, although in the various preparations the writer has made, samples of which are before you for examination, preference was had for a base composed of plain cosmoline with 5 per cent. of purified yellow wax. The wax is purified by hot filtration through paper, a sample of which is also presented for examination, and I would here take occasion to mention that I have always found purified yellow wax far preferable, and have used it in my business for a number of years, before it was recognized officinally. One great advantage in using it in connection with cosmoline, is its deodorizing power over it. You will readily perceive this peculiarity by comparison.

We are all familiar with the fact, that our ointments, having lard as a base, unless made with benzoinated lard, and not surely then, are as a class unreliable after obtaining age. This trouble *can* be obviated by the use of cosmoline, although it must be admitted that the experiments made as yet do not make the rule an absolute one; much encouragement, however, can be taken for hope that it may become such. The writer saw ointments prepared nearly three years ago with cosmoline, that are unaffected by age, and has never known simple cerate of the U. S. Pharmacopœia to keep half that length of time.

This fact will be appreciated, and has been taken advantage of already by the United States government. The manufacturers say the government has made large purchases of the plain, the carbolated, and cosmoline simple cerate, after the formula of the U. S. Pharmacopœia.

The following formula composes the base of all the sample ointments, except citrine and rose-water ointments, and the cerate of subacetate of lead and cerate of cantharides:

Cosmoline, . . . 1 part, or 3 troy ounces, 6 drachms, and 24 grains.
Purified yellow wax, 5 per cent., or 96 grains.
First melt the wax, then add the cosmoline, stirring the mixture until cool.

Where lard, olive oil, or almond oil is designated in the officinal formula, the plain cosmoline was used.

The writer believes that for hot weather the percentage of wax could advantageously be increased 20 to 30 per cent.

The sample of mercurial ointment marked one-third wax, will convey a good idea of its consistence in hot weather; for winter use it would probably be too hard, excepting for lip salve, as usually put up in small boxes.

The experiments made are not to the writer's satisfaction by any means, yet they prove the adaptability of cosmoline as recommended for the various pharmaceutic uses to which the very unstable article, lard, is usually adapted, and possessing much more therapeutic value.

The ointments and cerates before you for examination are twenty-one in number, namely, cosmoline ointment, made with purified yellow wax, 5 per cent. and 33 per cent.; mercurial ointment, made with both bases; the ointments of carbolic acid, of tannin, antimonial ointment, ointment of rose-water, of belladonna, of nutgall, ammoniated mercury, red iodide of mercury, nitrate of mercury, red oxide of mercury, iodine, stramonium, tobacco, simple cerate, and the cerates of cantharides, subacetate of lead, and resin cerate.

II. MATERIA MEDICA.

ON THE SOLUBILITY OF THE ACTIVE PRINCIPLES OF RHUBARB IN WATER.*

BY CHARLES A. HEINITSH.

Query 22.—Does water extract all the purgative principles of rhubarb, and is the alcoholic percolate of rhubarb, after its exhaustion with water, inert?

To answer the query three several quantities of two troy ounces, one troy ounce, and five hundred grains of coarsely ground rhubarb, of different lots, were macerated and expressed until the expressions were colorless and tasteless; the rhubarb carefully dried, weighed, and then percolated with alcohol (.835) until exhausted.

The alcoholic percolate was evaporated in a water-bath to a thick pilular consistence; made into three and six-grain pills, and given to several physicians for trial.

In every trial of the three-grain pills, they were laxative, and the six-grain pills, in two cases were laxative, and in four cases were purgative.

From the trials had the alcoholic percolate of the rhubarb, previously exhausted by water, is not inert.

Lancaster, Pa., August 22d, 1874.

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* Read at the Third Session.

AN ESSAY ON THE ACTIVE CONSTITUENTS OF BITTER ORANGE-PEEL,

WITH SPECIAL REFERENCE TO THE BITTER PRINCIPLE.*

BY RICHARD H. STABLER, M.D., ALEXANDRIA, VA.

THE prevalence of volatile oil dispersed over all parts of the plants of the natural order Aurantiaceæ, or citron worts, of Lindley, is a distinguishing characteristic. They resemble the rue worts, in the abundance of volatile oil pervading the genera, but differ from them in their consolidated, juicy fruit. The leaves abound in a volatile, fragrant, bitter, exciting oil, contained in separate oily receptacles; the pulp of the fruit is always more or less acid.

Two varieties of orange-peel are used in medicine, the sweet orange, the product of Citrus aurantium, and the bitter or Seville of C. vulgaris, of De Candolle.

The constituents of orange-peel are volatile oil, a crystallizable principle (Hesperidin of Lebreton), and in bitter orange-peel, an uncrystallizable principle, or extractive, of a very bitter taste (Aurantiin of Pereira), and traces of gallic acid.

Volatile Oil.—The oil of orange-peel is obtained by expressing the lacerated rind of sweet or bitter orange, or by distilling the rind or expressed oil with water.

The oil obtained by expression is less clear, of sp. gr. 0.856, and more agreeable than that obtained by other means. When distilled, it is clear, very mobile, white at first, becoming pale-yellow or greenish-yellow; it boils at 165° C.

The oil obtained by expression is always colored, much more so than that obtained by distillation. The expressed oil is less pure, because it holds in suspension or solution mucilage and other fixed substances.

This oil is isomeric with oil of turpentine, $C_{10}H_{16}$, as are similar oils from other aurantiaceous plants, C. bergamia, C. limetta, C. limonun, etc.

Oil of Neroli, obtained from orange flowers by distillation with water, is probably of the same nature when pure (F.).

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* Read at the Third Session.

When kept in closed vessels it deposits crystalline, easily fusible, volatile clots, soluble in water, and alcohol; the oil ultimately turns viscid and brown (Gaubius).

With iodine it gives off yellowish-red vapors with great violence, assuming a resinous consistence.

By nitric acid it is converted into a brittle resin.

Oil of vitriol colors it dark reddish-brown. The oil of orange-peel, besides its odor, is distinguished from oil of turpentine by rotating the ray of polarized light to the right and not to the left. This is true also of the oils of limes, cedrat, bergamot, etc.

When exposed to hydrochloric acid it combines with it, forming two compounds; one the dihydrochloride, $C_{10}H_{16}$, 2HCl, existing in a solid and a liquid modification; and a monohydrochloride, $C_{10}H_{16}$,HCl, apparently susceptible of similar modifications.

With water it forms a crystalline hydrate. It is soluble in all proportions in anhydrous alcohol, and with turbidity in seven to ten parts of alcohol, sp. gr. 0.85.

Hesperidin.—The crystallizable principle, which resides more especially in the white spongy portion of the rind of the fruits of the genus Citrus, was discovered by Lebreton in 1828, the juice which exudes when cutting through the fruit being rendered milky by hesperidin. It occurs abundantly in the germs of orange-blossoms, but not in the petals or filaments.

Hesperidin was obtained by Lebreton from unripe oranges by a complicated and unproductive process. In a paper read before the Physiological Society by Dr. Cogswell, in 1854, and quoted in the *American Journal of Pharmacy* of that year, p. 552, he has found it was deposited in crystals by evaporating a decoction of the white portion of the rind, while in the same portion of the shaddock, C. decumana, it was separated by simple maceration in cold water, and could be collected in a filter.

The alcoholic tincture yields on evaporation a very bitter granular extract, which on standing for a week with twenty times its weight of water, or distilled vinegar, gradually deposits crystalline hesperidin. Purification is effected by recrystallization from hot alcohol.

When unripe oranges are preserved in vinegar or alcohol of 22° B., hesperidin crystallizes at the bottom of the vessel.

Hesperidin occurs in delicate, silky tufts of needles, grouped in nodules, which are odorless and tasteless when pure, though they usually possess slight bitterness, probably owing to the adherence of another substance.

Hesperidin melts above 109° C., and solidifies on cooling to a brownish-yellow transparent mass, and does not again crystallize from alcohol. When submitted to dry distillation it does not yield ammonia, but leaves a porous charcoal. In cold nitric acid it assumes a yellowish-red color, and dissolves when heated, with formation of oxalic acid and a little yellow artificial bitter.

Strong sulphuric acid turns hesperidin first orange-yellow, afterwards bright-red.

In strong hydrochloric acid hesperidin acquires a greenish-yellow color, which is destroyed by water. Hydrochloric or sulphuric acid when added in excess to the alkaline solution of hesperidin, and then boiled, a deep orange-red resin is deposited, which is soluble in water; insoluble in alcohol; soluble in oil of vitriol with rose-color; in ammonia with greenish-yellow, and in caustic alkali with deep-red color.

Hesperidin is nearly insoluble in cold, soluble in sixty parts boiling water, which deposits three fifths of the amount dissolved on cooling. It is insoluble in dilute sulphuric or hydrochloric acid, but easily soluble in aqueous fixed alkalies; also in aqueous ammonia; remaining free from ammonia on evaporating the solution; it is precipitated from the alkaline solution by acids; it forms with lime a soluble compound, precipitable by alcohol. The aqueous solution of hesperidin does not precipitate neutral or basic acetate of lead; it dissolves slightly in cold, and freely in hot glacial acetic acid; the solution is not rendered turbid by water, but is precipitated by alcohol; it leaves hesperidin free from acetic acid on evaporation; it dissolves very sparingly in cold, very easily in hot alcohol; the solution is rendered only slightly turbid by water; it is insoluble in cold and hot ether, and in volatile and fat oils (Lebreton). This principle is probably without activity as a medicine.

The Bitter Principle.—The mother-liquor of hesperidin contains in solution the bitter uncrystallizable extractive principle of orange peel, which is obtained on evaporation as a brown extract, which, when prepared in scales, by evaporation of the liquid on sheets of glass, soon becomes soft and adherent by exposure to the atmospheric moisture.

In distilled water this substance is readily and entirely soluble, forming a clear, light-brown solution. Solution of persalts of iron change it to dark reddish-brown; it is colored bright-yellow by ammonia; it is not precipitated by gelatin; very soluble in dilute alcohol, less so in strong alcohol (93° Tralles); insoluble in ether, chloroform, purified benzin, and oil of turpentine. Acetic acid (No. 8) dissolves it, but destroys its bitter taste.

It is this bitter extractive principle (aurantiin), evidently, that imparts the active tonic properties to the bitter orange-peel.

The aromatic and carminative properties possessed by both the sweet and bitter orange-peel is communicated by the volatile oil pervading the external layer.

ALEXANDRIA, VA., August, 1874.

ON EXTRACT OF LIQUORICE OF AMERICAN MANUFACTURE.*

BY A. W. MILLER, M.D., PH.D.

QUERY 1.—American extract of liquorice is regarded by a recent investigator, as of superior quality, and is found to yield a large percentage of water. Does not such extract contain an admixture of gum or dextrin?

NOT having met with any other true American extract of liquorice in rolls or sticks, excepting that which is manufactured by Messrs. Mellor & Rittenhouse, of Philadelphia, the attention of the writer was chiefly directed to this article. Although an American extract of liquorice, commercially known as the Stamford brand, is found in the New York market, this possesses comparatively little interest to pharmacists, as it is sold only in mass, being chiefly consumed by the manufacturers of chewing tobacco. A note to the eleventh edition of the United States Dispensatory, states that the Messrs. Tilden, of New Lebanon, New York, manufacture liquorice largely in three forms, namely, in mass, in small rolls, and in lozenges. An inquiry addressed to these gentlemen, however, elicited the brief reply that they are not manufacturers of solid extract of liquorice.

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* Read at the Second Session.

One thousand grains of dry, powdered M. & R. extract of liquorice were dissolved in about 8 ounces of distilled water. The solution was filtered through a tared filter, and the insoluble portion was percolated with distilled water until this passed free from color. The insoluble residue, after being carefully dried, was found to weigh 242 grains.

In order to arrive at the amount of gum contained in the filtrate, the process of Neubauer for obtaining pure arabin was followed. The solution was slowly evaporated to about 6 ounces, and then precipitated by the addition of 1 drachm of C. P. muriatic acid, and 8 ounces of alcohol. The precipitate was percolated with alcohol until this was no longer colored, and did not taste of glycyrrhizin. It was further purified by being redissolved in a small amount of distilled water, and again precipitated by 10 drops of muriatic acid with sufficient alcohol. The precipitated gum was washed with pure alcohol on a tared filter, until silver nitrate produced no reaction on the spirit passing through. It was next washed with boiling alcohol, so as to remove the last traces of glycyrrhizin. The dried precipitate was found to weigh 158 grains.

For the purpose of ascertaining what proportion of this gum was a foreign admixture, a pure extract of liquorice was specially prepared by percolation with cold water. Four pounds of liquorice root yielded 1 pound 4½ ounces of moist extract.

From 1000 grains of this extract treated in the same manner as the M. & R. liquorice, 130 grains of insoluble matter and 28 grains of gum were obtained. Another 1000 grains of this same moist extract were thoroughly dried, losing 209 grains in weight, or nearly 21 per cent. 1000 grains of dry, powdered extract would therefore contain about 36 grains of gum derived from the root itself.

Subtracting this from the 158 grains found in the M. & R. liquorice leaves 122 grains, or about 12¼ per cent. Some allowance must however be made for coloring matters, which adhered very tenaciously, and also on account of the difference in mode of preparation. The M. & R. extract is made by long-continued digestion, which in all probability extracts a larger proportion of gum from the root than cold percolation, and which may possibly convert a portion of the starch into dextrin. The actual addition of gum may therefore be fairly estimated at about 10 per centum.

Stamford extract of liquorice lost 8½ per cent. in drying. 1000 grains of the dried extract were found to contain 153 grains of insoluble matter, but after standing some little time, a second precipitate was observed in the solution, which when separated and dried weighed 74 grains more. 61 grains of gum were obtained from the entire quantity.

The gum obtained from each sample gave a strong reddish-brown color with iodine, indicative of the presence of dextrin. With the extract made by cold percolation, the color vanished after a few minutes; with the Stamford extract the coloration was visible for an hour or two, while the M. & R. extract required two or three days to bleach out again. This small amount of dextrin is most probably a derivative from the starch contained in the root itself.

It would be unfair to regard the addition of gum to liquorice in the light of a fraudulent adulteration, as the difference in price is but trifling. Gum is generally regarded as necessary for the purpose of preserving the proper cylindrical form of the sticks of liquorice. The Dispensatory, quoting M. Delondre, states the amount which is requisite to effect this object to be 15 per cent.

In concluding the subject, the writer feels abundantly justified in directing the special attention of the Association to the gratifying fact that an American firm, composed of our own members, has succeeded in producing an extract of liquorice which in price competes successfully with the imported brands, while in quality it excels even the far-famed Duca de Corigliano.

PHILADELPHIA, August, 1874.

THE ACTIVE PRINCIPLES OF THE OFFICINAL VERATRUMS.*

A CHEMICO-PHYSIOLOGICAL STUDY.

BY CHARLES L. MITCHELL,
Graduate and Member of the Philadelphia College of Pharmacy.

PART I.—BOTANICAL.

Veratrum Viride.—The rhizoma of Veratrum viride, U. S.
Veratrum Album.—The rhizoma of Veratrum album, U. S.
Sabadilla.—The seed of Veratrum sabadilla, U. S.

VERATRUM. *Nat. order*, Melanthaceæ. *Suborder*, Melantheæ. *Gen. ch.*, *Hermaphrodite.* Calyx, none; corolla, six-petalled; pistils, three; capsules, three, many-seeded. *Male*, Calyx, none; corolla, six-petalled; stamens, six; pistils, a rudiment. (Willd.)

Veratrum Viride (U. S. Disp., p. 886), American hellebore, Indian poke, poke-root, swamp hellebore. An herbaceous plant, indigenous to the eastern portion of the United States, and flowering from May to July. The root is perennial, thick, fleshy, the upper portion tunicated, the lower solid, and beset with numerous rootlets. The stem is from three to six feet high, annual, round, solid, striated, and pubescent; furnished

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* Read at the Sixth Session.

with bright-green leaves, and terminating in a panicle of greenish-yellow flowers. The leaves gradually decrease in size as they ascend. The lower are from six inches to a foot long, oval, acuminate, plaited, nerved, and pubescent, and embrace the stem at their base, forming a sheath for a considerable portion of its length. Those on the upper part of the stem, at the origin of the flowering branches, are oblong-lanceolate. The panicle consists of numerous flowers distributed in racemes with downy peduncles. Each flower is accompanied with a downy pointed bract much longer than its pedicel. There is no calyx, and the corolla is divided into six, oval, acute segments, thickened on the inside at their base, with the three alternate segments longer than the others. The six stamens have received filaments and roundish two-lobed anthers. The germs are three, with recurved styles as long as the stamens. Some of the flowers have only the rudiments of pistils. Those on the upper end of the branchlets are barren, those on the lower portion fruitful. The fruit consists of three cohering capsules, separating at the top, opening on the inner side, and containing flat, imbricated seeds. This plant is found in low, marshy ground.

Veratrum Album (Woodville's Med. Bot., p. 754), white hellebore. An herbaceous plant, indigenous to Central Europe, and found in mountainous districts. The rhizoma is perennial, about an inch thick, externally brown, internally white, and beset with many strong fibres. The stalk is thick, strong, round, upright, hairy, and usually about four feet high. The leaves are numerous, very large, oval, entire, ribbed, plaited, without footstalks, of a yellowish-green color, and surround the stem at its base. The flowers are both hermaphrodite and male, existing in very long, branched racemes, and are of a greenish color. They appear from June until August. The hermaphrodite flowers are without calyces, the corolla consisting of six petals, which are oblong or lance-shaped, veined, persistent, and of a pale-green color. The filaments are six, closely surrounding the germens, shorter than the corolla, and terminated by quadrangular anthers. The germens are three in each flower, erect, oblong, and ending in short hairy styles, which are crowned with flat spreading stigmata. The capsules are three in number, oblong, compressed, erect, two-celled, opening inwardly, and containing many oblong, compressed, membranous seeds. The male flowers differ from these only in not containing the germens.

Veratrum Sabadilla (Carson, Ill. Med. Bot., vol. ii, p. 50). An herbaceous plant, indigenous to Mexico. The stem is erect, simple, round, and from three to four feet high. The leaves are numerous, spreading on the ground, all radical, oblong-ovate, obtuse, with eight to fourteen ribs, and glaucous underneath. The flowers are rather nodding. The pedicels are very short, and approximated in twos and threes; those of the fertile flowers eventually becoming turned to one side, those of the sterile flowers deciduous and leaving a scar. The segments of the perianth are ovate, lanceolate, veinless, and of a blackish-purple. The ovaries are three, oblong and connate-obtuse. The styles are acute and dilated downwards. The stigmata are simple. The capsules are three in number, in form resembling those of the larkspur, and opening at the apex inside. The seeds are three in a cell, imbricated, curved, blunt cn one side, sooty, and acrid.

These three drugs belonging to the nat. order Melanthaceæ, genus Veratrum, now included in our Pharmacopœia, present to the eye of a careful student, one of the most interesting group of plants known to science. All belonging to the same genus, and all having a marked similarity in their physical characteristics, they sustain the similitude also in their chemical and physiological relations to each other. Two of them are roots, alike in nearly every respect, and differing only in the accidental circumstances of preparation for the market, while the third, although a seed, still bears a strong resemblance to the others in taste, odor, etc., and it is highly probable that the root of this latter plant would show a still more striking resemblance, if brought into comparison with the first two. They are all extremely poisonous, have an acrid and burning taste, and all produce violent irritation when brought into contact with the denuded cuticle.

The theory has long been entertained, that if plants having nearly the same physical and botanical characteristics, differ from each other only in a few comparatively unimportant particulars, their chemical constituents will be found to bear nearly as close a relation, the degree varying according to the general similarity of the plants. This theory has been fully proved in the case of the plants belonging to the nat. orders of the Solanaceæ, Menispermaceæ, Berberidaceæ, etc., and it is partly the purpose of the present essay, to demonstrate the correctness of this theory, as far as regards this subdivision of the nat. order, Melanthaceæ. Before going farther, I shall treat briefly of the appearance and physical differences existing between these three drugs, first taking up veratrum viride. As found in commerce, veratrum viride is usually in slices and fragments, generally with the rootlets attached. The rhizoma has apparently been quartered longitudinally, then each piece subdivided into two parts, and thus dried. Very rarely it is found whole, and as far as my own experience goes never without the rootlets. In fact, this is one of the main features which serve to distinguish it from veratrum album. The rhizoma when entire is from one to two inches in length, by about an inch in thickness at its broadest part, tapering from that to a very obtuse or truncated extremity, and closely covered with numerous yellowish rootlets. Externally it is of a blackish color, obscurely annulated and marked with close set indentations, and generally having a tuft at the top, caused by the remnants of the sheathing leaves. Internally it is of a dirty white color, very hard and horny when dry, and showing a brown ring under the bark, inside of which can be noticed numerous small, irregular, annular markings. For use the portions of the dried stem and rootlets should be rejected, as they are inert. Veratrum viride has a slight peculiar odor, much more noticeable when moistened, and a bitter, acrid, burning taste, resembling both pyrethrum and aconite. When snuffed up the nostrils, it occasions the most violent sneezing, and applied to a portion of the surface denuded of the cuticle, has caused great irritation and sometimes even nausea and vomiting.

Veratrum album, its congener and ally, bears such a close resemblance to it, that the two can only be distinguished by their appearance in the market; veratrum album being always found whole, and divested of rootlets. The rhizoma is from one to three inches long, by about an inch or less in diameter, cylindrical or in the shape of a truncated cone, and often many-headed. At the top it is tunicated, being the remains of the sheathing leaves. Externally it is of a blackish or brownish-gray color, obscurely annulated, and marked with numerous whitish scars, where the rootlets have been removed. Internally it is hard, of a dirty white color, and exhibits the same ring under the bark and annular markings as is noticed in veratrum viride. In its taste it also closely resembles that root, being bitterish and acrid, and it has the same irritating effect on the mucous membrane and cuticle.

These two roots are so much alike, that when both are divested of their rootlets, it is almost impossible to separate them. I have consulted several high authorities on this subject, and find it is the general opinion, among the best pharmacognosists of this country and of Europe, that there is no reliable method of determining between them, except by the presence or absence of the rootlets. One French author, indeed, attempts to prove a slight difference in the size of the cells in the rootstalk, but his deductions are unsatisfactory and indefinite.

Sabadilla or cevadilla seeds generally occur in commerce mixed with the fruit. This consists of three coalescing capsules or follicles, which open above and appear like a single capsule with three cells. They are three or four lines long, and a line and a half in thickness, obtuse at the base, light-brown or yellowish, smooth, and contain in each capsule two or three seeds. These are elongated, pointed at each end, flat on one side and convex on the other, somewhat curved, two or three lines long, wrinkled, slightly winged, black or dark-brown on the outside, whitish within, hard, inodorous, and of an exceedingly acrid, nauseous, burning, durable taste.

PART II.—CHEMICAL.

In order to properly understand the main points under discussion in this paper, it will be first necessary to review briefly the different theories advanced as to the composition of these three drugs.

Soon after the publication of Norwood's memoir on Verat. Viride, Mr. H. C. Worthington (Am. Jour. Pharm., 1838) published an analysis of the root, claiming to have isolated an active principle identical with veratria. His discovery was confirmed in 1857 by Mr. J. G. Richardson (Ibid., xxix, 204), and in 1862, Mr. G. J. Scattergood also examined the root with similar results, finding, however, in addition, that the resin was much more powerful than the alkaloid. Up to this date, all investigators had agreed in pronouncing the alkaloid found in this root to be identical with veratria, but in 1865 (Ibid., Sept., p. 321, and March, 1866, p. 97), Mr. Charles Bullock, of Philadelphia, published a very complete paper on this subject, in which he announced that the alkaloid in question was not veratria, differing from it chemically in not answering to Trappe's test; while the resin which Scattergood found so active, owed its power to the presence of another alkaloid, characterized by its insolubility in ether. Dr. George B. Wood, in the thirteenth edition of the U. S. Dispensatory, suggested provisionally for these principles the names of Veratroidia and Viridia. Mr. Bullock's paper was soon after ably supplemented by an essay published by Dr. H. C. Wood, Jr. (Am. Jour. Med. Sci., Jan., 1870), in which the physiological properties of these alkaloids were investigated and described, in comparison with veratria. The subject now seemed closed, but in May, 1872, Dr. Eugene Peugnet, of New York, published in the "Medical Record," an elaborate paper, on both veratrum viride and veratrum album, in which he asserted that Mr. Bullock was partly mistaken in his discoveries; viridia being a mixture of veratroidia with another alkaloid, which he (Peugnet) claimed was identical with the jervia, discovered by Simon in verat. album, and possessing only feebly poisonous properties. This paper is very incomplete, the physiological experiments upon which his arguments are mainly based being indefinite and unsatisfactory. The subject created considerable discussion between him and Dr. H. C. Wood, Jr., the main points being left unsettled. In 1874, while making some investigations on verat. viride, I also noticed the presence of jervia (Am. Jour. Phar., March, 1874), not being aware until after publication of my paper, that I had been anticipated by Dr. Peugnet. This comprises our knowledge of veratrum viride up to the present time.

Our knowledge of the chemistry of verat. album is still more incomplete. Pelletier and Caventou, in 1819, appear to have been the first to investigate its chemistry, and found an alkaloid which they called veratria. Simon, in 1837, believed he had found two other alkaloids, one of which he called jervia and the other barytina. Subsequently he transferred the name of jervia to the barytina, discarding it as lime, and recognized the jervia as being identical with sabadillia. Peugnet (see loc. cit.) examined the root and found it to contain jervia, no veratria, but instead an alkaloid identical with veratroidia, and ascribed the difference in the physiological action of the two roots to the presence of an active resin in verat. album, which, when isolated, produced all the poisonous and peculiar effects occasioned by an overdose of the root.

Veratrum sabadilla seeds, according to Pelletier and Caventou, contain veratria, cevadillic acid, a peculiar fatty matter, etc. M. Couerbe discovered two other principles which he named "Le Veratrin," and "Sabadillia." The latter being white, crystallizable, soluble in hot water, and insoluble in ether, and the former a brown resinous matter left after treating impure veratria with pure ether, soluble in acids, and precipitated by alkalies. Simon claims that sabadillia is identical with jervia. Hübschmann confirms the former statement (Couerbe's), as to the separate existence of sabadillia (Am. Jour. Pharm., xxv, 133). Dr. Mossel (Sur la Veratrine, Paris,1868), considers sabadillia identical with barytina (jervia). The separate existence of sabadillia seems thus to be involved in considerable doubt. The chemical and physiological properties of veratria have been so often discussed, that I do not think it necessary to again enter into their consideration.

Some time in the month of December, 1873, I first commenced my investigations on veratrum album, subsequently taking up veratrum viride, and still later sabadilla, thinking that viewed in the light of my previous experiments with the other two veratrums, I might possibly be able to elucidate some points in its chemical composition, which had hitherto seemed obscure. In all these experiments the physiological action of the alkaloids was carefully studied as I progressed, by both Dr. H. C. Wood, Jr. (who had previously experimented with the alkaloids prepared by Mr. Bullock), and also by myself. I am also indebted to Dr. Peugnet for some few experiments. The main points to which I directed my investigations were these:

(1.) What is viridia? Is it a separate alkaloid?

(2.) Is viridia identical with jervia?

(3.) Does veratroidia also exist in verat. album, or is there a distinct alkaloid differing from the viride veratroidia?

(4.) Does the resin of verat. album owe its toxic power to an alkaloid like the resin of verat. viride?

(5.) Do the alkaloids exist in sufficient proportion in verat. viride and verat. album to be profitably extracted?

(6.) Does jervia exist in verat. sabadilla?

(7.) Are jervia and sabadillia identical?

(8.) Is the "Le Veratrin" a separate principle, or only an intimate mixture of veratria and resinous matter?

(9.) Do the alkaloids of these three drugs bear a definite relation to each other in their chemical and physiological characteristics?

VERATRUM VIRIDE.

Exp. No. 1. Thirty-two troy ounces of the powdered root were exhausted with alcohol 85 per cent., the first 16 fluid ounces saved, and the next 5 pints evaporated to 16 fluid ounces, and mixed with the first tincture. This fluid extract was now acidulated with 2 fluid ounces of acetic acid, poured into $\frac{1}{2}$ gallon of water, stirring constantly, and allowed to stand twenty-four hours. The precipitated resin was separated by filtration, and the filtrate evaporated to 1 pint, a little alcohol added to retain the coloring matter, and the whole precipitated by carb. soda in slight excess. On examining the filtrate from this I noticed at once that it seemed to possess considerable activity. It had the bitterish taste of the root, and left a numbing, tingling sensation in the fauces, which lasted for some time. It was, therefore, set aside for future examination. Continuing the process as described by Mr. Bullock, I soon found that I had scarcely any alkaloid left, it seeming to be quite soluble in an excess of the precipitating liquid. The substance I obtained weighed about 3 grains, was soluble in ether, and corresponded to the chemical and physiological reactions of veratroidia. The resin was next treated, in order, if possible, to extract the viridia from it, as according to Mr. Bullock's statements it existed there in considerable quantity, but the alkaloid obtained from it was pronounced by Dr. Wood to be also veratroidia. At a subsequent date, the alkaline residue which had been set aside at the beginning of the process was examined. It was acidulated with acetic acid, concentrated by evaporation, saturated with milk of lime, and the precipitate drained, dried, and exhausted with alcohol. The alcoholic solution gave on evaporation a resinous mass, which showed the color reaction of veratroidia with sulphuric acid. On purification it yielded some 10 grains of an alkaloid, $\frac{1}{3}$ grain of which, when given to a cat, produced death within an hour, attended with all the symptoms of veratroidia poisoning. Jervia was also obtained as a by-product in this experiment, as a granular, white powder. As I had been so far unsuccessful in my search for viridia, another series was instituted, with the view of finding both a better precipitant and a better menstruum.

Exp. No. 2. Ten pounds of veratrum viride were exhausted with a menstruum of 3 parts alcohol and 1 part water, acidulated with muriatic acid, in the proportion of 1 fluid ounce of acid to every pound of root. This menstruum was adopted in order, if possible, to get rid of some of the resin, which had proved to be a source of great annoyance in the first experiment. The first 5 pints of tincture were saved, and the next 10 gallons of tincture evaporated to 5 pints, and mixed with that saved. This concentrated tincture was precipitated in 10 gallons of water, the resin separated by filtration, and the filtrate concentrated to 10 pints. Several different portions of 1 pint each were now tried with various precipitants, with the following results, the precipitate in each case being exhausted with alcohol, and the alcoholic solution evaporated to dryness.

Carbonate of Soda,	yielded	impure	alkaloids,	10	grains	in 1	pint.
Carbonate of Potassa,	"	"	"	12	"	"	"
Ammonia,	"	"	"	8	"	"	"
Magnesia,	"	"	"	25	"	"	"
Lime,	"	"	"	24	"	"	"

The precipitate from lime was nearly as great as that from magnesia, so lime being a much less expensive precipitant, was used throughout the remaining experiments. The remaining 5 pints of liquid were precipitated with lime, and the alkaloids extracted, but I could find no viridia. As these two experiments had been mainly tentative, a final one was instituted, and a more careful search made for the missing principle.

I found the last menstruum, namely, that of $\frac{3}{4}$ alcohol, not so well adapted for extracting the root as that first used, for it took up quite as much resin and an additional quantity of coloring matter, so that I returned to the original menstruum of alcohol. In order to make the plan of the following experiment more clear, let me say here that the main difference between viridia and veratroidia, given by Mr. Bullock, is that viridia is insoluble in ether.

Exp. No. 3. Five pounds of powdered root were exhausted with 85 per cent. alcohol, and a fluid extract prepared as before. To this 5 fluid ounces of acetic acid were added, and the whole poured into 4 gallons of distilled water. After standing twenty-four hours the resin was separated, and the liquid evaporated to 2 pints. During the evaporation, more resin was deposited, which was mixed with that first obtained, the whole dissolved in 2 pints of alcohol, and set aside. (1.) Milk of lime was now added in excess to the conc. acid liquid, and the precipitate separated after standing some hours, washed slightly to free it from coloring matter, drained, and dried. This was powdered, mixed with a small quantity of pure animal charcoal, and exhausted with boiling alcohol. On evaporating the alcohol the alkaloids were left as a hard, dark-brown, resinous mass. This was digested with very dilute sulphuric acid, and set aside for several days. By this means the major portion of the resin and jervia were separated, as a granular, dirty-white powder. This powder was filtered off and also set aside (2), while to the acid filtrate a little alcohol was added, and then a very slight excess of a strong solution of caustic soda (℥iv to Oj). A whitish, flocculent precipitate was produced, which in a short time assumed a semi-crystalline appearance. It was washed slightly, dried and powdered, and then agitated with successive portions of pure ether, carefully freed from alcohol, until all the veratroidia seemed to be removed, and a drop of the ether evaporated on a glass slide gave only a faint color reaction with SO_3. On dissolving the remaining insoluble portion of the powder (which was much darker), in dilute sulphuric acid, adding ether and then excess of soda, more veratroidia was dissolved.

The heavier liquid was washed repeatedly with portions of fresh ether, but on testing the washings with SO_3, they would still give a faint color reaction, showing that all the veratroidia had not been removed. It was, therefore, thrown on a filter and the insoluble resinous portion separated (*A*). Thinking that viridia when freshly precipitated might be soluble in ether, the ethereal liquids were treated in the following manner, those from the dry powder being kept separate from the washings of the fresh precipitate. They were agitated with successive portions of very dilute sulphuric acid, the aqueous liquid separated, concentrated, and then mixed with excess of sol. soda. The precipitates when washed were white powders, violently sternutatory, and of a bitter tingling taste. That from the dry powder weighed 30 grains, that from the precipitate (moist), 10 grains. The two were carefully compared, but acted the same both chemically and physiologically.

The insoluble resinous portion separated from the heavy liquid (*A*), was dissolved in water acidulated with SO_3, allowed to stand in order to separate some resin, and then precipitated with soda, washed and dried. It weighed 26 grains, and was of a darker color than the first alkaloid. On testing this physiologically, it was found to produce all the effects of veratroidia, and by dissolving, separating the resin, precipitating, and washing with ether, several times, I succeeded in removing all the veratroidia, and found the portion which was still insoluble to be a mixture of resin with some sulphate jervia. The washings from all these different precipitates had been carefully saved, and were lastly examined, in order to ascertain if the viridia were dissolved in them. They were evaporated to dryness, treated with hot alcohol until everything soluble had been removed, the alcoholic solution decolorized with animal charcoal, evaporated to dryness, digested with very dilute sulphuric acid, and set aside. On standing a slight precipitate of resin separated, which was filtered off, a little alcohol added, and then sol. soda in excess. The precipitate washed and dried weighed 13 grains. It was found to be soluble in ether. Thus far most certainly no viridia.

The resin (see 1, p. 407) was next examined. The alcoholic solution previously set aside was agitated repeatedly with petroleum benzin, until all fatty matter had been extracted and the benzin solution evaporated. It left a greenish, oily, inert liquid, having a strong odor, and weighing 240 grains. Five drops of this injected into a pigeon had no effect. The alcoholic solution of the resin, freed from oil, was now acidulated with 5 fluid ounces of acetic acid, and precipitated in 2 gallons of water. This treatment was repeated several times, the acid liquors concentrated and precipitated with lime, etc., as before, yielding 50 grains pure alkaloid. It proved to be quite soluble in ether. The insoluble resinous portion gave the same result as before, being only veratroidia with resin and some jervia. This alkaloid was compared with the first veratroidia and proved to be the same. It is worthy of remark here, that the quantity of jervia separated from the resin, was largely in excess of that obtained from the conc. alc. tinc. of the root. I, therefore, found no viridia in the resin. The jervia precipitates were mixed together, boiled with a strong solution of carb. soda to decompose the sulphate jervia, and the precipitate separated, washed until free from alkali, and dissolved in acetic acid; precipitated by sol. soda, washed and dried. It weighed 69 grains. I discovered one curious fact in connection with this alkaloid I had not before noticed, and which, I think, is worthy of mention. All authors speak of its insolubility in sulphuric acid, but I have observed that when very impure, and intimately mixed with resin and veratroidia, it appears to partake for the time of their solubility, and becomes quite soluble in that acid. When once purified it loses this property. I could therefore find no principle possessing the same solubilities and chemical reactions which characterize Mr. Bullock's viridia. Thinking that perhaps I might have made some error, my investigations were twice repeated, but with the same result. An experiment was also tried of exhausting the root with diluted acetic acid, but my experience was that it did not do it thoroughly.

The alkaloid veratroidia thus extracted is a white powder, uncrystallizable, of a bitter taste, leaving a tingling sensation in the fauces, violently sternutatory, and extremely irritating. It fuses at 265°. It is soluble in alcohol, amylic alcohol, ether, chloroform, bisulph. carbon, and when freshly precipitated very slightly in petroleum benzin. It forms soluble salts with the acids, most of which are uncrystallizable. The alkalies and their carbonates precipitate it from acid solutions in white, semi-crystalline flakes, which are slightly soluble in excess of the precipitant, especially when ammonia is used.

Jervia is a white powder, capable of crystallizing from an alcoholic solution, tasteless, not sternutatory, and of a slight alkaline reaction. It is insoluble in water. It is freely soluble in alcohol and chloroform. With acetic and phosphoric acids it forms very soluble salts; with sulphuric, hydrochloric, and nitric acids, it yields salts sparingly soluble in alcohol and water, and precipitated from the more soluble acetate and phosphate. When heated it melts to a clear oil, at a little above 400° F. turns brown, and when the temperature is raised still higher, it burns with a smoky flame.

The resin when freed from alkaloids is dark-brown, tasteless, inert, soluble in alcohol and alkaline solutions, and very slightly soluble in diluted acids.

The yield of alkaloids from veratrum viride varies considerably in different lots of the root, as does also the amount of resin. I append the yield per pound of three different lots, as compared with the results of Mr. Bullock and Dr. Peugnet.

		Lot 1.	Lot 2.	Lot 3.	Bullock.	Peugnet.
Veratroidia,	grs.	18.3	24.5	28.6	4.6	4.3
Viridia,	"	....	....	....	14.3	...
Jervia,	"	16	18.2	20.5	...	7.5
Resin,	"	115	110	192	...	...
Oily matter,	"	10	25	50	...	...

Lot No. 3 was a fine sample of veratrum viride, the others were ordinary specimens. The quantity of resin and alkaloids very probably vary with the time of gathering. I do not think the alkaloids can be profitably extracted.

The results of this investigation differ considerably from those of Mr. Bullock, but I think they are in the main correct. Most certainly there did not exist in any of the lots of verat. viride which I examined (and they were all good, fair samples of the root, and ground directly under my personal supervision), any active principle which corresponds chemically to viridia. I have every time succeeded in finding both jervia and veratroidia, even in the preliminary experiments. The question immediately arises, does there exist such a principle in verat. viride, besides the other two alkaloids? I say no, and as the physiological experiments will prove, jervia has all the physiological effects of viridia on the system (see pp. 418–419). Mr. Bullock must therefore have confounded the two in some manner, as he makes no mention of jervia anywhere in his paper.

The most efficient preparations of this root are the officinal tincture, fluid extract, and extract. If its virtues are desired in a more concentrated form they may be obtained by the following formula, which gives a powder corresponding to the eclectic "veratrin."

Resina Veratri Viridis.

Grd. Verat. Viride,	1 lb. av.
Calc. Magnesia,	100 grs.
Alcohol,	q. s. or 4 pints.

Exhaust the verat. viride with the alcohol, evaporate the tincture to syrupy consistence (about 2 fluid ounces), add the magnesia, mix well, and then gradually add 1 pint of water, stirring constantly. Separate the precipitate, drain, dry, and powder. Yield, 330 grains. This contains all the active principles of the root, and acts powerfully in doses of from ¼ to ½ grain.

Thinking that a knowledge of the inorganic constituents of verat. viride might prove interesting, I append an accurate analysis, made at my request, by Mr. H. W. Mitchell, of Cornell University.

Quantitative Analysis of the Ash of the Root of Veratrum Viride.

$NaCl$,	.490	Percentage of water lost by drying root 4 days, 8.45.
Na_2O,	1.370	
K_2O,	23.020	After drying as above, total percentage of ash in dried root, 4.63.
CaO,	17.730	
MgO,	6.065	(The determination of the total percentage of ash in the root being a very important point, great care was taken, and five parallel experiments made, with good results; the above stated percentage may, therefore, be regarded as nearly correct.)
SiO,	5.670	
FeO,	6.430	
P_2O_5,	9.380	
SO_3,	8.190	
CO_2,	11.200	
Sand,	11.920	
Carbon,	.149	
	101.604	

VERATRUM ALBUM.

The preceding experiments with verat. viride, made many of the preliminary investigations unnecessary for the examination of veratrum album, so that the following process was at once followed out.

Ten pounds of powdered root were moistened with 1 gallon of alcohol 85 per cent., allowed to macerate twenty-four hours, and then percolated with q. s. alcohol to exhaust. The alcoholic tincture was evaporated to 5 pints, acidulated with 5 fluid ounces of acetic acid, and precipitated in 5 gallons of water, previously acidulated with 5 fluid ounces of acetic acid. The resin was separated, and the filtrate evaporated to 4 pints, the deposited resin being removed, mixed with that first separated, and the whole dissolved in 2 pints of alcohol, and set to one side. To the filtrate was added milk of lime in excess, the precipitate separated, washed, dried, powdered, mixed with a little animal charcoal, and digested repeatedly with boiling alcohol, until nothing more was taken up. The alcoholic tincture was evaporated to dryness, and the resinous mass left, digested with dilute sulphuric acid, and after everything was dissolved, concentrated to a small bulk and allowed to cool. A considerable quantity of sulphate jervia separated, which was filtered off, and set to one side for purification, while to the filtrate a little alcohol was added and then sol. soda in slight excess. The precipitate produced was separated, washed and dried. It weighed 136 grains, and when treated with pure ether behaved in a similar manner to veratroidia, fully dissolving when freed from jervia and resin. The alkaloid extracted from the dry powder and that from the fresh precipitate (same manner as on p. 407), were kept separate, in order to be physiologically tested, and marked respectively "Alkaloid A," and "Alkaloid B." (See pp. 420, 421.) The alcoholic solution of resin previously set aside was freed from oil and fatty matter, by frequent agitation with petroleum benzin, and after the addition of 10 fluid ounces of acetic acid, was precipitated in 2 gallons of distilled water. This treatment was repeated several times, until the resin seemed to be totally deprived of active matter. The acid liquors yielded 134 grains alkaloid, which was found when freed from resin to be wholly soluble in ether. It was the same as the alkaloid first obtained. The filtrates and washings from these different precipitations yielded 30 grains more of alkaloid.

The benzin washings gave when evaporated a yield of 3 ounces of oily matter, a much larger proportion than that existing in veratrum viride.

The jervia precipitates when purified yielded 84 grains of jervia. The resin weighed 2400 grains, and appeared like the resin of veratrum viride. It was tasteless, odorless, and as far as my experiments went, nearly inert. For its physiological action, see p. 420.

About this time I received from Dr. Peugnet, with whom I had been carrying on quite a discussion, a few grains of the resinoid (as he termed it), which he had found so active, $\frac{1}{20}$ grain of it having killed a pigeon within an hour. It was dissolved in alcohol, acidulated strongly with acetic acid, and kept warm for some time; after which it was poured into 6 fluid ounces of water, the resin carefully separated, and the filtrate evaporated to a small bulk. The evaporation caused the separation of more resin, which was filtered out, and the clear solution precipitated with sol. soda. This precipitate when dried weighed nearly 2 grains, and proved to be an alkaloid identical in its reactions with the one I had previously obtained in my experiments. Several physiological experiments were made (see Exp. 1, 2, 3, p. 419), with a solution of this alkaloid, and a solution of the resin from which the alkaloid had been removed. The results proved conclusively, that the resin of verat. album is like the resin of verat. viride, nearly inert. The error of Dr. Peugnet lay probably in the fact that his impure resin was treated in the solid form with the diluted acids, in which condition the alkaloids can be but partially removed, instead of dissolving the resin in alcohol, then acidulating, and finally precipitating in water.

The quantity of alkaloids in veratrum album varies quite as much as in veratrum viride; from two different lots I obtained the following results:

In One Pound Avoirdupois (7000 grains).		No. 1.	No. 2.
Alkaloid soluble in ether,	grs.	40.50	30.3
Jervia,	"	11	8
Resin,	"	240	200
Oily matter,	"	144	105

The alkaloid soluble in ether resembles very much the verat. viride alkaloid veratroidia. It is white, uncrystallizable, of a bitter, acrid taste, leaving a burning, tingling sensation in the fauces, even more acrid and irritating than veratroidia, and produces the most violent sneezing. It is soluble in alcohol, amylic alcohol, ether, chloroform, bisulphide carbon, and sparingly in benzin. It forms soluble salts with the acids, which are uncrystallizable. It fuses at 340°, and sublimes in small feathery crystals. The alkalies and their carbonates precipitate it from its acid solutions in white, semi-crystalline flakes, which are slightly soluble in an excess of the precipitant, especially when ammonia is used. With the bicarbonates it yields a precipitate only on heating.

The jervia corresponds chemically to that from verat. viride. All these alkaloids are precipitated from their solutions in tartaric acid by bicarb. soda. Their behavior with color reagents is seen in the following table (p. 415) as compared with veratria.

We thus see that this alkaloid from verat. album differs from both veratria and veratroidia. It is, I think, a distinct principle, as will be farther shown by its physiological action. It is much more powerful than either of these alkaloids. For this principle I propose provisionally the title of veratralbia.

Dr. Peugnet's resin proved pretty conclusively that dil. acetic acid would not exhaust the root; I tried a small experiment with the same menstruum and came to the same conclusion.

Reagent.	Jervia.	Veratroidia.	Veratria.	Alk. Verat. Album. (Veratralbia.)
Sulphuric Acid.	Yellow, changing to a deep green.	Yellow, changing to a brick-red.	Yellow, changing to a crimson.	Yellow, changing to a rich, dark-red.
Sulph. Acid and Br.	Changes from green to a very light brown color, almost colorless.	Brown.	Brick-red.	Dark-brown.
Sulphuric Acid and Chromate Potass.	Yellowish-brown.	Brown.	Brown.	Brown.
Hydrochloric Acid (cold).	Diss. to a colorless solution.	Diss. to a colorless solution.	Diss. to a colorless solution.	Diss. to a colorless solution.
Hydrochloric Acid (hot).	Yellow, deepened by boiling.	Yellow, deepened by boiling.	Yellow, when boiled changing to a deep solferino color. (*Trappe's Test.*)	Yellow, deepened by boiling.
Nitric Acid.	Yellow, deepened by boiling.	Yellow, deepened by boiling.	Yellow, deepened by boiling.	Yellow, deepened by boiling.
Perchlor. Gold.	Curdy yellow ppt.	Yellowish-white ppt.	Yellow-white ppt.	Straw-yellow ppt.
Iodohyd. Potass.	Curdy white ppt.	White ppt.	White ppt.	White ppt.
Bichlor. Plat.	Gran. yellow ppt.	Flocc. yellow ppt.	Very faint ppt.	No reaction.
Sulphocyan. Potass.	Flocc. white ppt.	White ppt.	White ppt.	White ppt.
Aq. Chlorinii.	Faint whitish ppt.	White ppt., faint.	White ppt., faint.	White ppt., faint.
Tannic Acid.	White.	White ppt., faint.	White ppt. faint.	White ppt., faint.

The question of the profitable extraction of the alkaloids from verat. viride and verat. album, is a matter of considerable uncertainty, and I doubt very much if they can ever be brought into extended use. They exist in extremely small proportion, and their separation is attended with so much difficulty and expense, that I think it extremely unlikely their manufacture on a large scale will ever be attended with success.

SABADILLA.

Four pounds of finely ground sabadilla seeds were exhausted by percolation with alcohol 85 per cent., the alcoholic tincture evaporated to a small bulk, acidulated with 4 fluid ounces of acetic acid, and poured with constant stirring into 4 gallons of distilled water. The acid liquid was evaporated to 2 pints; the separated resin being mixed with that first precipitated, dissolved in 2 pints of alcohol, and set to one side. Milk of lime in excess was added to the conc. acid liquid, the whole allowed to stand twenty-four hours, and then filtered, and the precipitate well washed, drained and dried. This was powdered, mixed with some animal charcoal, and then the whole mass repeatedly digested with strong alcohol, until nothing more was dissolved. The alcoholic solution was evaporated to dryness, and the resulting resinous mass dissolved with gentle heat in dilute sulphuric acid, concentrated to a small bulk, and set aside to deposit jervia. After the lapse of some days, the liquid still remained perfectly clear, showing that it contained no jervia. It was now decolorized by boiling with a little pure animal charcoal, a little alcohol added, and then precipitated with an excess of sol. soda. The precipitate when washed and dried weighed 840 grains. This was agitated with successive portions of ether, and the ethereal solution shaken frequently with dilute sulphuric acid, the heavier liquid separated, warmed slightly to free it from ether, and then precipitated again with sol. soda, washed and dried. It weighed 800 grains, was quite white, and corresponded to veratria in its reactions.

The residue remaining from the ether was boiled with distilled water, the insoluble portion filtered off, and the filtrate concentrated and set to one side, to see if it would crystallize; the residue on the filter was treated with dilute sulphuric acid. This partly dissolved it, the insoluble portion being resin. This soluble resinous matter corresponded to Couerbe's "Le Veratrin," being insoluble in ether, soluble in acids, and precipitated by alkalies. On adding ether to this solution, then excess of soda, and agitating, the precipitate at first formed was nearly all dissolved, there remaining only a small portion of resinous matter adhering to the sides of the bottle. The ethereal solution was removed, and the heavier liquid acidulated with sulphuric acid, which now only partially dissolved the resinous matter. The insoluble portion was separated, and as I found the solution still gave a precipitate, it was again treated in the same manner. The precipitate this time was nearly all taken up by the ether, only a little resinous matter remaining. When this was treated with the acid it did not dissolve, and the liquid gave no precipitate with an alkali. The different insoluble portions filtered out were found to be resin. The ethereal solutions were mixed, and the alkaloid extracted; it weighed 30 grains, and chemically and physiologically proved to be veratria. I therefore conclude that Couerbe's "Le Veratrin" was only an intimate mixture of resin and veratria.

The liquid which was set aside gave a small quantity of crystals, which answered to all Hübschmann's tests for sabadillia. The quantity was too small to admit of any physiological experimentation.

The alcoholic solution of resin, previously set aside, was now agitated with successive portions of benzin until freed from oily matter, and then acidulated with 4 fluid ounces of acetic acid, and precipitated in 2 gallons of water. The resin precipitated was separated, and again treated as before. Both acid liquors were mixed, concentrated, precipitated with lime, and the alkaloid extracted in the usual manner. Yield, 100 grains. It contained no jervia.

The resin when separated and dried weighed 320 grains, and corresponded with the resins of verat. viride and verat. album; it was quite inert. When freshly precipitated it is slightly soluble in acids, and freely soluble in the alkalies and their carbonates. The benzin washings gave a yield of 4 ounces of oily matter, having a dark-green color.

Several experiments were now tried with the purpose of devising a formula for the manufacture of veratria which would yield as large a percentage, and cost less than the preceding formula. The following was at length adopted:

℞. Ground Sabadilla Seeds, . . any convenient quantity.

Exhaust the seeds with q. s. of a menstruum composed of: water, 1 gallon; acid mur., 1 fluid ounce; and evaporate the liquid to a syrupy consistence; to this add milk of lime in slight excess, separate the precipitate, and wash slightly with distilled water, drain and dry. Mix this with a little animal charcoal, powder and exhaust with boiling alcohol. Evaporate the alcoholic solution to dryness, dissolve the residue in dilute sulphuric acid, decolorize with pure animal charcoal, and precipitate with a slight excess of sol. soda. The precipitate when washed and dried will be a fair article of veratria. If it is wanted perfectly pure it may be obtained by dissolving the crude veratria in ether, agitating the ethereal solution with dilute sulphuric acid, and precipitating with an alkali. By this means I have obtained a yield of pure veratria, averaging 225 grains to the avoirdupois pound, and at a very small cost. The ether and alcohol used in this operation may both be recovered by distillation, thus materially lessening the expense.

Although my results with sabadillia were not perfectly conclusive, owing to the small quantity at my disposal, yet I feel almost positive that it is not identical with jervia. I may be able at some future time to settle the matter. This concludes the chemical portion of my paper.

PART III.—PHYSIOLOGICAL.

Samples of veratroidia, jervia (verat. vir.), veratralbia, and jervia (verat. alb.), were furnished to Dr. H. C. Wood, Jr., who, after fully experimenting with them, forwards the following report. I give his note in full.

"1706 CHESTNUT STREET, August 3d, 1874.

"DEAR SIR: In reply to your recent note, I have to thank you for the alkaloids which you so kindly placed at my disposal, and to state that I have performed a large number of experiments with those obtained from veratrum viride, and a few with those prepared from veratrum album. The verat. viride alkaloids were two in number; one which you labelled *veratroidia*, and a second marked *jervia*. The first of these is undoubtedly the same substance as the material furnished me some years since by Mr. Bullock, under the same name.

"As the result of nearly twenty experiments, I have no hesitation in saying, also, *that your jervia is the viridia of Bullock.* There is absolutely no difference whatever in the symptoms produced; the same general weakness, absence of vomiting or purging, lowering of arterial pressure, and slowing of the pulse, profuse salivation, and finally convulsions, occur in either case. The character of the convulsions caused by viridia is, as I long since called attention to, very peculiar and very constant; I find that 'jervia' produces precisely the same form of convulsions, and am fully convinced of the identity of the two alkaloids.

"In regard to the alkaloids of verat. album, I am not able to speak so positively. The 'jervia' was only in sufficient quantity for a single experiment, and this was somewhat invalidated by the fact, that the drug was dissolved in a very large quantity of alcohol. The jervia of verat. album appears, however, to be the same as the jervia of veratrum viride.

"The 'veratralbia' I have experimented with to some extent upon frogs; its action is seemingly distinct from that of veratroidia, and, indeed, resembles more closely that of veratria. It is much more powerful than any sample of veratroidia I have ever seen, and acts much more intensely upon the muscles, appearing to be as truly and specially a muscle poison as is veratria. I have supplied one or two young men, whom I believe to be in every way competent, with the veratralbia, and expect that you will get, in a few days, a more definite and detailed report from them as to its physiological action.

"Yours respectfully,

"H. C. WOOD, JR.

"CHARLES L. MITCHELL, ESQ."

For a more detailed account of the foregoing experiments on the verat. viride alkaloids, I refer the reader to a paper by Dr. Wood, now in course of preparation.

These experiments settle pretty clearly the disputed point of the existence of viridia, and prove that jervia is not, according to Dr. Peugnet, a feeble spinal excitant, but, on the contrary, a powerful cardiac sedative and spinal depressant. Peugnet's theory that Bullock's viridia was a mixture, is not only not borne out, but positively disproved by his own experiments. I can give no explanation as to the wide difference between the chemical reactions of jervia (or viridia) as observed by Mr. Bullock and by myself, and can only refer the reader to the negative results of the close examination to which the root was subjected.

Dr. Peugnet's resinoid was next to be examined. The alkaloid had been previously separated from it (see p. 413), and was now tested, as was also the exhausted resin.

Exp. No. 1. (Made with exhausted resin from Dr. Peugnet's resinoid.) Male pigeon. 1.50 P.M., injected ½ grain hypodermically; 2.25, no action; injected 2 grains more, rather quiet; 4.30, has vomited slightly, quiet and rather depressed. Next morning, pigeon was as usual.

The vomiting was very probably caused by the resin not being perfectly free from alkaloid, as in experiment No. 6 the same result was noticed.

Exp. No. 2. (Alkaloid from Dr. Peugnet's resinoid.) Female pigeon. 5.15 P.M., injected hypodermically, with 2 min. sol. alkaloid (unknown strength); 5.20, vomiting; 5.30, very weak on feet, still vomits; 5.45, nearly paralyzed, falls on one side, convulsions; 6, paralyzed; left until the next morning it seemed to have partially recovered; gave 5 m. of solution; 5 min., dead. Slight convulsions.

Autopsy. Heart hard, contracted, empty. Marked congestion and redness of mesenteric vessels.

Exp. No. 3. Was made on myself. Jan. 13th., 3 P.M., took $\frac{1}{8}$ grain exhausted resin of verat. album; pulse 76. 1 hour. Pulse 80; no perceptible effect; took $\frac{1}{4}$ grain more. 1 hr. 30 m. Pulse 76; no effect; took $\frac{1}{2}$ grain. 2 hrs. 15 m. Pulse 78; took 1 grain; stomach feels mawkish and slightly nauseated. 3 hrs. Pulse 78; took 2 grains. 3 hrs. 30 m. Pulse 80; still slightly nauseated. 4 hrs. Pulse 80. Nausea still marked, relieved at times by eructations of wind. No other result was obtained, and nothing unusual was noticed, except a marked feel of nausea and indigestion.

These experiments leave no doubt as to the inactivity of the resin of veratrum album when completely deprived of alkaloids. In addition to the few experiments made by Dr. Wood with veratralbia, a number of additional ones were made by both myself and Dr. John R. Haynes, to whom Dr. Wood had kindly referred my samples of alkaloid.

Exp. No. 4. (*J. R. H.*) *Veratralbia A.* May 2d, 1874, 10 P.M. Full-grown pigeon. Weight, 13 ounces. Pulse 140, to beyond count when frightened (ear to side). Respirations, 58. Temperature, 110°; thermometer in rectum 5 min. Injected hypodermically $\frac{1}{10}$ grain into thigh. Immediately on placing on table sat tremulously on whole length of legs; nodded; fell on side; gave two or three convulsive movements; emptied rectum. 3 min. Respiration, 116. $3\frac{1}{2}$ m. Heart-beat inaudible; marked opisthotonos; and death at 4 minutes after injection. Pupils unchanged throughout.

Post-mortem. 5 min. after death (temp., 107°). Heart hard, contracted, empty. Lungs, pinkish-white; not congested. Alimentary canal and apparatus normal. Brain and spinal cord rather anæmic. Rigor mortis not yet developed.

Exp. No. 5. (*J. R. H.*) *Veratralbia B.* May 3d, 3.15 P.M. Pigeon, weight $11\frac{1}{4}$ ounces. Heart-beat 176 to beyond count when agitated. Respirations, 48. Temperature, 110°. Injected into thigh $\frac{1}{10}$ grain. Flew from table across room; fell on floor and hopped on one leg to corners, at first holding up the leg which had received the injection; afterwards, dragging along as if paralyzed. 3 min. Respirations very frequent; heart-beats inaudible; slight opisthotonos; and death in 4 min. after injection. Pupils contracted just before death, immediately afterwards dilated.

Post-mortem. 5 min. after death. Had defecated slightly. Temperature, 112°; slight rigor mortis. Heart; right auricle filled with dark blood; left auricle with red blood; ventricles nearly bloodless, hard and contracted. Lungs natural; not congested. Alimentary canal, normal. Brain and spinal cord anæmic.

These experiments were made with the veratralbias *A* and *B*, which had been carefully separated, in order to ascertain whether, owing to their mode of extraction, there was any difference between them (see p. 412), and show that they are identical.

Exp. No. 6. Small kitten. Veratralbia. Injected $\frac{1}{1500}$ grain; vomited in half an hour; appeared depressed; remained perfectly active; no paralysis; no change in pulse or respirations.

Exp. No. 7. Injected into vena cava descendens $\frac{1}{15}$ grain veratralbia. Before injection, pulse 160; respirations, 30. After $1\frac{1}{2}$ min., heart 112; two inspiratory gasps since injection. 3 min. Heart 90. 8 min. Auricles still beating; respiration has ceased entirely; ventricles of heart contract very slightly. Artificial respiration by means of blowpipe in trachea was commenced. A notable increase immediately occurred in the force of the contractions of the auricles and ventricles. Slight cardiac contractions for more than an hour. No post-mortem was made.

Experiment No. 8. (*J. R. H.*) *Dog, weight* 14 *pounds.*

Time.	Heart.	Respiration.	Temp.	General Symptoms.
Before Injection.	104	28	101.2°	Injected in thigh $\frac{1}{20}$ gr. veratralbia.
1½ min.	. . .	Very rapid, panting.	. . . .	Ran across room, staggered, fell on side, got up and walked with difficulty when called.
3½ "	52	24	. . . .	Vomited copiously; avoided operator.
10 "	44	12	. . . .	Intense retching; seeks corner.
12 "	35	10	. . . .	Loose stool; intense retching; lies on belly.
22 "	40	Interrupted. 18	. . . .	Walks to corner when put on feet; pupils natural.
27 "	48	22	101.2°	Salivation.
31 "	Regular for two or three beats, then very irregular		. . . .	Walks when compelled; lays in any position in which placed; groans.
37 "	140	. . . .	. . . .	Paralyzed; sprawls when put on feet.
39 "	176	9½	. . . .	Retching.
45 "	. . .	. . . .	. . . .	Slightly more power; retching.
50 "	180	Very irregular.	. . . .	Conjunctiva sensitive; pupils dilated.
55 "	Cannot be felt	One convulsive gasp per minute.	96°	Pupils somewhat contracted.
57 "	. . .	. . . .	. . . .	Dead.

Autopsy. 3½ hrs. after death. Rigor mortis marked. Lungs congested with venous blood. All veins leading to and from heart distended with black blood; heart, left cavities filled, right cavities distended with black blood; liver, very much congested, black; spleen, ditto; stomach, intensely congested, walls bathed with bloody mucus; small intestine filled with bloody mucus, walls softened and highly congested; kidneys congested; brain congested, red points appear on section; spinal cord but slightly congested.

Experiment No. 9. (*C. L. M.*) *Large Male Cat, weight* 16 *pounds.*

Time.	Heart.	Respirations.	Temp.	General symptoms.
Before Injection.	120	36	102°	Injected $\frac{1}{40}$ gr. veratralbia.
2 min.	110	38	....	Bites at wound; tries to hide in corner.
10 “	70	24	....	Nauseated.
12 “	...	Very rapid.	....	Vomiting.
20 “	50	20	....	Intense retching; tries to hide.
30 “	45	18	....	Loose stool, and then violent purging.
35 “	40	Interrupted.	....	Lies on belly; retching; salivated.
45 “	35	14	100°	Can hardly walk, lays in any position in which placed; cries.
50 “	50	22	....	Paralyzed; sprawls when placed on feet.
60 “	100	Interrupted and very irregular.	....	Convulsions, in which the rigidity lasts for several minutes.
80 “	130	10	....	Completely paralyzed; groans.
100 “	180	6	99°	Slightly more power; retching.
120 “	200	One gasp per minute.	....	Pupils somewhat dilated.
140 “	...	Resp. ceased.	98°	Pupils contracted.
180 “	Heart, which had been beating much more slowly, stopped entirely.			

Autopsy. 5 min. after death. Marked muscular irritability; muscles shrinking and quivering when cut; lungs congested; veins and heart distended with thick black blood; liver engorged with blood and almost black; stomach intensely congested; small intestine filled with bloody mucus, much softened and congested; marked contraction and dryness of lower portion of large intestine.

Some seven or eight other experiments tried on dogs and cats gave the same general symptoms as noted in the foregoing experiments, the intensity of the gastro-intestinal inflammation varying with the length of time before death. The autopsy of those animals whose death was the slowest, exhibited the most intense hyperæmia and gastro-intestinal irritation. These results bear out very closely the effects of verat. album on the lower animals described by Oulmont.

When a poisonous dose of veratralbia or one of its salts is injected into the tissues of a warm-blooded animal, the first symptom noticed is one of prostration and weakness, the animal manifesting a desire to be quiet. The pupils are normal, and it appears perfectly conscious. The next symptom is a marked quickening of the respirations, attended by an increasing uneasiness and nausea. The respirations gradually become more and more labored, the nausea increases, and finally the most violent vomiting ensues. This continues at intervals, attended with profuse salivation, and often copious discharges from the bowels. Meanwhile the respirations become less and less frequent, and very irregular, the animal faintly moans and cries, and gradually becomes completely paralyzed, losing all power of reflex action. The limbs are generally relaxed, although sometimes a slight disturbance will cause convulsions, in which they remain rigid and extended for several moments. These convulsions are often absent, and are, I think, to some extent regulated by both the animal and the size of the dose. I have noticed them much more in cats than in dogs. The paralysis continues, the respirations become more and more faint, until at length death closes the scene. During all these stages the animal retains consciousness. The heart continues to beat some time after cessation of respiration. The autopsy discloses marked congestion, and generally the most violent inflammation of the stomach and intestines. These symptoms are varied by the dose, a large amount causing almost instant convulsions, paralysis, and death, without any of the intestinal disturbances.

The question which immediately arises is, how does veratralbia produce death? Through the respiratory system, the heart, or the brain? It is evident that it is not of cerebral origin. It must, therefore, be either through the respiratory or the circulatory systems. In experiments Nos. 7, 8, 9, the heart continued beating some time after the cessation of respiration. Death was caused by asphyxia, the result of a failure of the muscles of respiration. In very large doses there is just the reverse of this. The respirations are comparatively unaffected, while the action of the heart is almost immediately stopped (see experiments 4, 5), and death is probably caused by its suspension. After death the heart is found contracted, and in experiment No. 6, the auricles were found filled respectively with venous and arterial blood, while the ventricles were almost bloodless, hard, and contracted. That veratralbia acts as an arterial sedative, is shown by the fall of the pulsations and the temperature. One curious fact remains to be here noted. The arterial pressure gradually diminishes until a certain stage is attained, after which it gradually increases, and finally exceeds its pristine force, and then gradually falls, the pulsations continuing some time after respiration has ceased. That this is probably due to asphyxia is proved by the fact, that in experiment No. 7, artificial respiration produced an immediate quickening of the heart's action. Its effect on the alimentary canal is more difficult to explain, but is probably due to a paralysis of the vaso-motor nerves.

Exp. No. 10. (*J. R. H.*) Divided the cord in the neck of two half-grown frogs, and into one injected $\frac{1}{100}$ grain of veratralbia.

Time.	Frog (with injection of Alkaloid).	Time.	Controlling Frog.
3m. 30s.	Acetic acid 36 per cent. causes no movement in other leg.	3m. 30s.	Causes motion.
8m. 30s.	Apparent period of muscular excitation, muscles of posterior extremity deep red, and respond feebly to galvanic current.	8m. 30s.	Muscles of posterior extremities respond actively.
12 min.	Muscles almost paralyzed, respond still more feebly.	12 min.	Muscles almost white, respond freely.

Gastrocnemius nerve placed in sol. alkaloid (gr. iij to aq. f ʒj), diminished action; action in ½ minute; and complete paralysis in ½ minute.

This experiment would tend to coincide with those of Dr. Wood, and to prove that veratralbia is both a muscle and a nerve poison, very much resembling veratria, and standing midway between it and veratria. I therefore conclude that veratralbia acts as,

I. A local irritant.

II. An irritant emetic and cathartic.

III. A direct depressant to the circulation.

IV. A powerful nerve and muscle poison, producing death by either paralysis of the respiratory nerves, or by a sudden paralysis and suspension of the action of the heart muscle. Its action on the nervous system has not been studied. It is probably a spinal motor depressant, like the other alkaloids of this group.

I therefore conclude, in answer to my queries on page 404,

I. There exists no such alkaloid as viridia.

II. Bullock's viridia is identical with and probably was jervia.

III. There is a distinct alkaloid in verat. album differing from both veratroidia and veratria.

IV. The resin of verat. album is in itself nearly inactive, and owes whatever power it may possess to the presence of vetratralbia.

V. The alkaloids do not exist in sufficient proportion to be profitably extracted.

VI. Jervia does not exist in verat. sabadilla seeds.

VII. Jervia and sabadillia are probably not identical.

VIII. Couerbe's "Le Veratrin" is a mixture of resin and veratria.

IX. If the reader has carefully gone over my paper, any answer to this question, farther than "Yes," is unnecessary.

In conclusion, I desire to express my thanks and deep indebtedness to Dr. H. C. Wood, Jr., for the physiological studies to which this paper owes so much of its value; and for counsel and advice in what was to me a novel and difficult line of research. My thanks are also due to Dr. Haynes for his valuable assistance.

In presenting this paper to your honorable Association, my main object has been to settle a long-existing controversy, and to throw some light on, to me, a very interesting subject. If in your opinion my efforts have been successful, I shall feel fully repaid for the amount of time and labor expended.

PHILADELPHIA, August 17th, 1874.

III. CHEMISTRY.

HOME-MADE CHEMICALS.*

BY JAMES R. MERCEIN.

While deeply regretting that the imperative calls of business will prevent my attendance at the present meeting of the American Pharmaceutical Association, I have ventured to send a few representatives in my place who will do their best to speak for me.

It has long been a deep-rooted belief of mine, a belief that time and experience have strengthened, that pharmacists should make for themselves many articles they now depend upon manufacturing chemists to supply. Apart from any other aspect of the case, it has always seemed to me that this branch of our profession possesses a fascination and an interest that go far towards alleviating the confining cares of our arduous business. The multitude of petty details, the annoyance of exacting customers, the wonderful stupidity of the average shop-boy, the long hours of work; all these need a compensating remedy, which should and can be found in the mysteries of pharmaceutical chemistry, in the triumph of mind over matter as embodied in the various processes by which the finer chemicals are produced. To point this moral I have sent for exhibition a few samples of what I shall term home-made chemicals, made in strict accordance with the United States Pharmacopœia. They are not shown as anything wonderful, simply as fair specimens of what any pharmacist with the ordinary apparatus in daily use should readily make. But they *are* shown as productions which pharmacists generally do *not* make, or which they do not think of making. And why not? Are we, who are members of what we call a profession, and not a trade, are we to be merely buyers and sellers of drugs and chemicals, mere "hewers of wood and drawers of water," content to take on trust as to purity, price, and correctness anything our wholesale friends may see fit to send us? Are we to content ourselves with making only the ordinary syrups, tinctures, and ointments for every-day calls, mere routine work, and are we never to endeavor to walk in the higher paths of our profession, where the knowledge we may have acquired from our schools and colleges of pharmacy, our text-books and our brains may be brought into use? We need not expect nor do we need to compete with large manufacturers in the making of numberless things—we would be at a loss without these gentlemen, and it would be worse than useless to attempt the manufacture of those products requiring skilled labor, expensive apparatus, and large capital. But there are many articles that can be so readily made at home with the ordinary appliances found in any good pharmacy, and I urge this for three reasons:

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* Read at the Sixth Session.

1st. For the sake of economy.
2d. For skill in manipulation.
3d. For the benefit of our assistants.

If we can make red iodide of mercury for 30 cents an ounce, when it costs us 50 cents to buy it, or ergotin for 35 cents, when the price current is 60 cents—in short, if we can save from 25 to 50 per cent., why not do so? We need not count the time spent as part of the cost of production, for there are always spare moments we can devote to this work, odds and ends of time otherwise wasted. As to the additional skill acquired in manipulation, "experentia docet," none of us know *too* much.

As to the benefit our assistants will derive from laboratory work, it is incalculable; it acts as a two-edged sword, cutting both ways, helping *them* to knowledge for their future career, giving *us* skilled labor and present pecuniary benefit.

JERSEY CITY, September 1st, 1874.

ON THE CHEMICALLY PURE MINERAL ACIDS OF COMMERCE.*

BY P. W. BEDFORD.

QUERY 51.—What are the degrees of strength and the purity of the so-called chemically pure mineral acids of the different manufacturers?

IN response to the above query, the writer has examined several specimens of each of the so-called chemically pure mineral acids as obtained from the respective manufacturers, and is glad to state that they are of better quality as found in the market than he had been led to believe. A chemically pure acid, *absolutely so*, is perhaps nearly impossible to obtain, but the United States Pharmacopœia and various works on chemistry give us certain tests, to which, if they respond negatively, they may be considered pure.

The acids examined were those issued by Messrs. C. T. White & Co., Powers & Weightman, C. H. Kraft, Erkenbach, Charles Pfizer & Co., M. Kalbfleisch & Sons, these representing the various manufactures found in the New York market.

In estimating the degrees of strength, the writer prefers to state the actual specific gravity as obtained by the careful weighing of each acid in a one thousand grain bottle, to any use of the hydrometer, or referring it to any of the trade-scales such as so many degrees Baumé. The result is therefore stated as the actual specific gravity in each case.

In experimenting as to the purity, the tests applied were for the purpose of ascertaining, if any of the impurities likely to occur, were to be found in the acid under examination.

Sulphuric Acid.—The impurities likely to be found in this acid, are iron, lead, arsenic, nitrous or nitric acid, chlorine from hydrochloric acid, and sometimes a residue on evaporation.

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* Read at the Fourth Session.

	Specific Gravity.	Arsenic, lead.	Iron.	Nitric or nitrous acid.	Hydrochloric acid.
C. T. White & Co., .	1 838 1.839	None.	None.	None.	None.
Powers & Weightman,	1.840 1.840	"	"	Trace.	"
C. H. Kraft, ...	1.830 1.838	"	"	"	"
C. Pfizer & Co., . . .	1.834 1.835	"	"	"	"
Erkenbach, ...	1.837 1.837	" Slight trace of lead.	" Trace.	"	"
M. Kalbfleisch & Sons,	1.838	"		"	"

In testing these acids, if they were free from any traces of contaminations, no coloration should be observed on addition of the test solutions.

The presence of iron was noticed in but one of the samples under examination, lead in two, while the presence of nitric acid compounds are found in all but White & Co.'s, being most apparent in the acids from Kraft, Kalbfleisch, and Erkenbach.

Nitric Acid.—The contaminations likely to occur in this acid are: chlorine from chloride of sodium in the nitrate used, sulphuric acid from its manufacture, or added to increase the specific gravity, iodine from the nitre. The specimens examined were free from any contaminations, except those of Erkenbach and Kalbfleisch, both of which contain chlorine.

	Specific Gravity.	Chlorine.
C. T. White & Co., ...	1.409 1 416	None.
Powers & Weightman, ...	1.402 1.403	"
C. H. Kraft, ...	1.395 1.402	"
C. Pfizer & Co., ...	1.411	"
Erkenbach, ...	1.402	Turbid.
M. Kalbfleisch & Sons, ...	1.334	"

Hydrochloric Acid.—The impurities likely to be found in this acid are: sulphuric, sulphurous and nitric acids, free chlorine, arsenic, iron. The only impurities found were iron and chlorine, and these in only minute quantities, only a faint coloration appearing with the application of the sulphocyanide of ammonia, indicating iron, found in the acid from Kraft, Erkenbach, and Powers & Weightman, and free chlorine in that from Powers & Weightman and Erkenbach, the latter having quite a perceptible quantity.

	Specific Gravity.	Iron.	Free Chlorine.
C. T. White & Co., . . .	1.191 1.174	None.	None.
Powers & Weightman, .	1.170 1.147	Trace.	Trace.
C. H. Kraft, ...	1.187 1.194	"	None.
C. Pfizer & Co., ...	1.189	None.	"
Erkenbach, ...	1.152	Trace.	Trace.
M. Kalbfleisch & Sons, .	1.126	None.	None.

It will be noticed that with the exception of hydrochloric acid, the chemically pure mineral acids found in our market do not come up to the standard of specific gravity, but are in other respects a good average for such chemical products.

ON DILUTE PHOSPHORIC ACID, U. S. P.*

BY LOUIS DOHME.

Query 17.—Why do some of the diluted phosphoric acids of the market form precipitates with tincture of chloride of iron, while others do not?

Having obtained several specimens of dilute phosphoric acid, which on being mixed with the officinal tincture of chloride of iron caused a precipitate, I subjected them first to the officinal tests, and found that, although they varied somewhat in specific gravity and neutralizing power, they afforded no precipitates when the tests were applied. A solution of nitrate of silver, however, with addition of a few drops of aqua ammoniæ, produced the characteristic yellow precipitate of tribasic phosphate of silver on each of the specimens, although the color, as I noticed in subsequent experiments, was of a somewhat paler yellow than that produced by a specimen of phosphoric acid which gave no precipitate with tincture of chloride of iron.

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* Read at the Third Session.

On mixing the phosphoric acid respectively with solutions of sublimed ferric chloride, ferric nitrate, subsulphate and tersulphate, the same white precipitate was produced, but no precipitate was caused in solutions of ferrous chloride or ferrous sulphate. I now proceeded to examine the nature of the precipitate, and for this purpose mixed equal quantities of the tincture of chloride of iron and the acid, when a dense white and somewhat gelatinous precipitate was obtained. This was thoroughly washed with water, drained on a filter, and having placed it in a capsule, treated with an excess of liquor potassa, which by abstracting the greater part of the phosphoric acid, caused the separation of a reddish-brown amorphous precipitate. This was separated by filtration from the liquor holding the acid in solution combined with potassium. Having neutralized the excess of potassa with nitric acid, a solution of nitrate of silver was added, and a few drops of aqua ammoniæ, which caused a white precipitate pointing to the presence of pyro- and probably also metaphosphoric acids.

The same experiment was repeated with a precipitate obtained from a mixture of the above phosphoric acid and a solution of ferric nitrate with the same result; while a precipitate obtained by mixing the tincture of chloride of iron with the ordinary phosphate of sodium, gave by the above treatment the characteristic yellow precipitate of tribasic phosphate of silver.

Having thus apparently obtained a clue to the cause of the precipitate, I next proceeded to verify the conclusion by adding a small quantity of solution of glacial phosphoric acid to a specimen of tribasic acid, which had previously been found to mix in all proportions with tincture of chloride of iron. The result, on adding this mixed acid to the tincture of chloride of iron, was a dense white precipitate like that produced by the first-named acid under examination.

A solution of glacial phosphoric acid was boiled with addition of a small quantity of nitric acid for a short time, till it no longer gave a precipitate with solution of chloride of barium, but still gave a white precipitate with nitrate of silver, showing that the monobasic acid had evidently been converted into bibasic acid. This acid was added to some tribasic acid (one part of the former to ten of the latter), which mixture was also found to produce a white precipitate with tincture of chloride of iron.

It was found that a smaller addition than 10 per cent. of the above impure bibasic acid to the tribasic did not cause a precipitate, which might be explained by the fact that pyrophosphate of iron is soluble to some extent in hydrochloric acid, and the small quantity formed when the above acid is mixed with tincture of chloride of iron, is held in solution by the free acid present in the tincture, and the acid set free during the reaction. The tribasic phosphate of iron, if formed by the addition of tribasic acid to tincture of chloride of iron, is readily held in solution by the hydrochloric acid liberated.

The above results lead me to conclude that the precipitate produced by the addition of tincture of chloride of iron to dilute phosphoric acid, is caused by the presence of pyrophosphoric acid in the latter.

Thinking that this contamination was no doubt due to the incomplete conversion of the meta and pyrophosphoric acids into the tribasic acid, when the dilute acid is prepared from glacial phosphoric acid according to the second officinal formula, I made numerous experiments to determine whether this contamination could be prevented, but the results, in carefully repeating the same experiments with specimens of glacial phosphoric acid, obtained from different sources, were so variable, that I am not at present prepared to report definitely on this point, but intend to follow up the subject, and report at a future meeting. I found, however, that dilute phosphoric acid, prepared according to the first officinal formula from phosphorus, is miscible in all proportions with tincture of chloride of iron, and is evidently free from meta and pyrophosphoric acids, if the precaution be taken not to carry the concentration of the acid, in the attempt to drive off the nitric acid, so far as to reach a temperature of 450° F. or over, as I found that at this point a sufficient quantity of the tribasic acid had been converted by loss of water into pyrophosphoric acid, as to give a white precipitate with tincture of chloride of iron.

BROMIDE OF AMMONIUM.*

BY W. H. PILE, M.D.

In looking over the various formulas, published from time to time, for making bromide of ammonium, I have met with none, in my opinion, that can be so readily followed as that in which the direct union of bromine and ammonia is taken advantage of. The formula of the United States Pharmacopœia is certainly the most ineligible and uncertain in its results. The fact which I allude to of bromide of ammonium resulting from the union of bromine with ammonia, has been observed in most chemical works, but the reaction is so exceedingly violent that this method appears not to have been followed up by any one.

A few years ago by cautiously experimenting in this direction, at the risk of being suffocated and causing a general stampede of all in the house, I finally arranged a method which I have followed ever since.

When bromine is poured into liquor ammonia f. f. f. an explosive reaction occurs, with a tremendous evolution of nitrogen and gaseous bromine, making a most unpleasant and dangerous experiment, but by reversing the proceeding, protecting the bromine from the sudden contact with the ammonia by means of a large volume of water and adding the ammonia gradually, the action is completely under control, and scarcely any bromine is liberated. The method I have pursued is as follows: Into a tall 5-gallon stone jar pour in about ½ gallon distilled water, and then by means of a long glass funnel, reaching down to the bottom, pour in carefully 1 pound of bromine; then by small portions at a time, add liquor ammonia f. f. f.; a brisk effervescence soon commences; cover the top of the jar with a glass plate when the vapors rise near the top, and add 2 or 3 ounces more ammonia when it subsides. The jar gradually becomes warm, which increases the action within; set the jar in cold water if necessary, until the action moderates. By thus proceeding, in less than an hour, and with the addition in all of about 1 quart of liquor ammonia, all the bromine will have disappeared, and the solution becomes completely colorless and free from the odor of bromine, although smelling of ammonia. It will not need filtering, and requires nothing further than evaporation to complete dryness, stirring constantly towards the end. The salt produced in this manner is perfectly white, does not change color by keeping, answers all the tests of the Pharmacopœia, and will amount to about 20 ounces in weight.

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* Read at the Sixth Session.

IRON BY HYDROGEN.*

BY J. CREUSE.

QUERY 33.—What is the quality of the iron by hydrogen of the market?

THE quality of the iron by hydrogen of the market leaves very much to be desired. The proportion of metallic iron which it contains is far from what it ought to be; it is even less than it was several years since. As the officinal process for making iron by hydrogen is long and difficult, few pharmacists ever attempt to prepare it the second time, and the totality of the product used in this country may be said to be supplied by manufacturing chemists. Hence it becomes important to have reliable methods for judging of the quality of the chemical. Several processes have been proposed and employed for the purpose, but a discussion of their merits and their faults will be necessary, in order to find out to what extent they can be depended upon.

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* Read at the Third Session.

The qualitative examination of iron by hydrogen offers no real difficulty. The questions to be decided are the following: Is the substance, iron, reduced by hydrogen, or is it iron mechanically divided? Does it contain impurities due either to defective fabrication, like sulphur and carbon, or to intentional adulteration, like plumbago, etc?

The first question, which is, of course, the most important, admits of a positive solution. Magnus's test is quite reliable; iron reduced by *hydrogen* must catch fire from a lighted match. Occasionally, however, samples of undoubted origin fail to burn unless they are previously warmed; this peculiarity I incline to attribute to the insecurity of the packages in which the chemical is kept, for reduced irons are very sensitive to the action of the atmosphere.

Incidentally, I am led to explain the meaning of the expression "*reduced iron*." Of course all iron is reduced in some way or other, but the term "reduced iron" in commerce is applied to the metal minutely divided by chemical means, as distinguished from the powder mechanically prepared from the ingot metal. The latter is generally called "*alcoholized iron*." It follows that iron by hydrogen is a reduced iron, but all reduced irons are not iron by hydrogen, for other processes besides the officinal method are known and used by manufacturers; they will be noticed hereafter. Besides Magnus's test, other means are available for distinguishing reduced from powdered irons; they relate mainly to the physical appearance of the powder, such as its color, density, mobility, etc. Under the microscope, for instance, reduced iron appears in lumps swelled up like sponges by the gases that have escaped from the mass, while alcoholized iron seems torn and ragged. The extreme lightness of real iron by hydrogen is so remarkable as to be also a good test of genuineness.

Next in order comes the search for the impurities. Of these sulphur is the most objectionable; the best iron by hydrogen becomes worse than useless if it contains sulphur in any appreciable quantities. Carbon is less injurious. Both are easily detected by the smell of the gas formed in dissolving the iron in an acid. A quantitative estimation appears to be unnecessary, for the sense of smell is sufficient in ordinary instances to determine whether the chemical is free enough from impurities which have probably no other injurious effect than the offensive odor of the gas which they generate in the stomach. Other impurities may be detected by the usual chemical processes. I have found none of these in any of the samples that came under my observation.

The quantitative examination of reduced irons is more difficult. Several processes have been proposed for estimating the quantity of metallic iron contained in the various products. One is to transform a known weight of the sample into ferric oxide, and to calculate from the increase of weight the probable amount of metal. Another is to treat the chemical by iodine or bromine and to weigh the residue, the loss of weight being supposed to be that of the metal present. Another again, is to measure the volume of hydrogen gas evolved when a certain quantity of the reduced iron is dissolved in an acid, and to compare it with the volume of gas which a like amount of pure iron would generate under the same circumstances.

The *first* or *sesquioxide process* was used in a research on the subject made and published in 1861. The writer of that paper, starting from the hypothesis that the commercial irons by hydrogen are a mixture of metallic iron with the magnetic oxide Fe_3O_4, neglected this oxide in his calculations, and deducted from the weight of the sesquioxide produced the probable quantity of metallic iron contained in the sample.

To this way of proceeding two objections can be made. The first is the neglect of the magnetic oxide. The error, however, is of little importance, and may be corrected in the following manner:

As 1 gramme of metallic iron produces 1.4285 of sesquioxide, and 1 gramme of magnetic oxide 1.0344 of the same, if we call x the weight of metallic iron contained in the sample, y that of the magnetic oxide, m the weight of the sample, and n that of the sesquioxide produced, we may write the two following equations:

$$(1)\ x + y = m \text{ and } (2)\ x \times 1.428 + y \times 1.034 = n.$$

Subtracting equation (1) from equation (2) and eliminating y we have:

$$(3)\ x = \frac{n - m \times 1.034}{1.428 - 1.034}$$

and if we make $m = 1$, the equation becomes the following simple one:

$$(4)\ x = \frac{n - 1.034}{0.394}$$

which may be translated into the directions: Take 1 gramme of the sample; from the weight of the sesquioxide it produces subtract 1.034 and divide the difference by 0.394. The quotient indicates in grammes the quantity of metallic iron contained in the sample.

I mention this at length, because I have first tested all my samples according to that method.

This calculation disposes of the first objection, but the second one is fatal and insurmountable; it is, that the magnetic oxide mixed with the metallic iron has but seldom the composition Fe_3O_4. It is a mixture, in unknown proportions, of all the magnetic oxides which range between Fe_3O_4 and Fe_6O_7. As we have no practical means of ascertaining the composition of these magnetic combinations, the sesquioxide process becomes useless, because the weight of the sesquioxide formed bears no known relation to the quantity of metallic iron contained in the sample. This is unfortunate, for the method allows of great accuracy, and gives results always concordant.

The *second* or *iodine process*, which has the sanction of the British Pharmacopœia, is based on the theory that when a mixture of iron and its magnetic oxides is treated by iodine, all the metal is dissolved without alteration, while the oxides remain unchanged during the operation as well as during desiccation.

In practice I have found the process to be slow and uncertain. A number of samples of iron already assayed being tested in that way, the results were so discordant and erratic that the process was abandoned. The ill-success may, to a certain extent, have been the fault of the operator, yet I will suggest, with due respect to the British Pharmacopœia, the following sources of error: First, pure iron is not always entirely dissolved by iodine without alteration. My experience, supported by that of Mr. B. A. McEntyre, of this city, is that even when bright and (commercially) pure iron is treated by iodine, a secondary reaction takes place, by which some of the metal is oxidized, and hydrogen is evolved. The formation of a gas is proved by the effervescence which occurs at a temperature where no steam can form, while the smell developed indicates plainly the nature of the gas. Other operators have no doubt remarked this fact, as well as the formation of a very fine black powder, which is nothing else than a magnetic oxide of iron. However, this source of error is unimportant, when compared with the others. While it is not certain at all that iodine has no oxidizing effect on the lower magnetic oxides of iron, these oxides are known to be quite unstable in the moist state. They keep moderately well under water, but when nearly dry they oxidize rapidly in open air, a change which may cause serious mistakes in the estimation.

The testing by bromine, as directed by the German Pharmacopœia, may be more accurate for separating the metal from its oxides, but the same objection, the instability of the moist magnetic oxides, remains as a stumbling-block. At any rate the prospect of a successful issue was not bright enough to encourage me to handle bromine, and I did not attempt it.

The *third*, or *gas process*, is founded on the relatively large volume of hydrogen evolved when iron is dissolved in acids. All the oxides of iron are dissolved without the formation of gas. The method is not a new one, for I proposed it in an article published by *Le Journal des Connaissances Médicales et Pharmaceutiques* in 1856. The suggestion appears to have been unnoticed or forgotten, yet the process is simple, rapid, and susceptible of a fair degree of accuracy.

The operation is conducted as follows: A deep water-tank is provided, into which a narrow cylindrical receiver, graduated in 100 or 200 cubic centimetres, is inverted in the usual manner for collecting gases. The discharge-tube is made long enough to reach almost to the top of the receiver, and is accurately fitted by a simple perforated cork to an ordinary flask. The tube ought to be of one piece, without any rubber joints. When everything is ready, about 10 grammes of muriatic acid and 5 grammes of water are poured into the flask, a certain weight of the iron to be tested, say 0.50 to 1 gramme, is folded in fine letter-paper and slipped into the flask, the glass tube is adjusted, one end being introduced into the receiver, and the operation begins. The wrapping of letter-paper delays the reaction long enough to allow ample time for all the manipulations. The apparatus may now be left alone, save an occasional gentle shaking. After five or six hours the paper is found to be reduced to a pulp, the iron has dissolved, all evolution of gas has ceased, and the whole has come down to the temperature of the room where the operation is performed. The graduated glass is now lowered into the tank till the water inside is level with that outside; the end of the discharge-tube is also brought down to the level of the water, and the number of cubic centimetres occupied by the gas is noted, and preserved for further calculation and correction.

The calculation may be made in the following manner: As 28 grammes of iron are equivalent to 1 of hydrogen, 1 gramme of pure iron ought to yield 0.03571 gramme of hydrogen. The weight of a litre of the gas being 0.8961 at 0° C., it follows that 1 gramme of pure iron ought to generate 398.54 cubic centimetres of hydrogen at 0° C. Allowing for the correction due to the temperature and to the tension of aqueous vapor, we may say that 1 gramme of iron produces in round numbers, at the ordinary temperature, 400 cubic centimetres of hydrogen. The figures are not exactly accurate, they even differ somewhat from those indicated by theory, but they agree with the results of practical experiments. If necessary, they might be corrected according to well-known data; but as they stand I believe they are of sufficient accuracy for pharmaceutical purposes, except in unusual cases, where large quantities of sulphur or carbon are present. Such occurrences, however, are guarded against by the preliminary qualitative examination.

I shall now proceed to describe the experiments made with the various sorts of reduced iron found in the market. All the samples were procured from reliable houses, and were represented by them to be of the best obtainable quality, which augurs badly for what second-rate houses would call the second quality.

No. 1. *Quevenne's Iron*, genuine, sold by E. Genevoix, Paris. Appearance: A slate-gray powder, very light and metallic in lustre. When touched with a lighted match it burns readily, leaving a bright-red ash. It dissolves rapidly and completely in dilute muriatic acid, but emits a very offensive smell of hydrosulphuric acid. A strip of lead-paper held in the escaping gas becomes black in less than one minute. This sample is, by far, the worst of all in that respect. The solution in the acid has a light-green color.

One gramme of the sample was dissolved in muriatic acid, oxidized by nitric acid, and filtered; the filtrate, precipitated by ammonia, washed, dried, and ignited, gave 1.240 grammes of sesquioxide of iron, which, according to the formula given elsewhere, seems to represent 52.27 per cent. of metallic iron.

Fifty centigrammes, on being subjected to the gas-test in the manner explained before, generated 104 c.c. of hydrogen, equivalent to 52 per cent. of metal.

One gramme was stirred in a beaker with a solution of iodine in iodide of potassium and kept at a gentle heat for about three hours. The whole, being collected on a filter and well washed, was dried over a water-bath; the powder, which was at first of a deep-black color, looked like a rusty cake with bright-yellow spots. The weight of it was 1.05 gramme, but, as on throwing some of it on muriatic acid, a quantity of gas was evolved, it was thought best to repeat the experiment.

Fifty centigrammes of the same sample were treated in the same manner by a solution of iodine, and allowed to stand about twenty hours in a moderately warm place. The whole was transferred to a filter and thoroughly washed with hot water first, and lastly with alcohol. When dry the weight of the powder was 0.450 gramme. The color was not sensibly altered, a result I attribute to the use of alcohol. The powder was left over night in the laboratory, and dried again in the morning, when its weight was found to be 0.455 gramme, an increase of 5 milligrammes. It was then subjected to the gas process, and it produced 33 c.c. of hydrogen, showing that nearly one-third of the metallic iron had escaped the action of the iodine.

No. 2. Of German origin. Appearance: A grayish-black powder with metallic lustre, rather heavy and granular. It does not catch fire from a lighted match, even after being heated; when heated in a porcelain crucible over a Bunsen burner, a faint glow appears in the centre, the powder loses its metallic lustre and cakes together, but remains of nearly the same color. It dissolves entirely in muriatic acid, although rather slowly, but with very little smell; yet lead-paper is blackened after awhile. The solution is of a pale-green color.

One gramme, treated by the sesquioxide process, formed 1.211 gramme of oxide, which apparently indicates 44.67 per cent. of metallic iron.

0.40 gramme generated 33 c.c. of hydrogen, showing 20.6 per cent. of metal.

No. 3. French; name of maker unknown. Appearance: A very black powder without any lustre; quite light; catches fire from a match and burns rapidly, leaving a bright-red ash, sensitive to the magnet. It is entirely soluble in muriatic acid; the reaction, very brisk at first, proceeds but slowly afterwards. The gas evolved has a fetid smell, and blackens lead-paper. The solution in muriatic acid has a pale-green color.

One gramme formed 1.130 of sesquioxide of iron, supposed to represent 25.63 per cent. of metallic iron.

One gramme gave 40 c.c. of hydrogen, equivalent to 10 per cent. of real metal.

No. 4. French; name of maker not very well known here. Appearance: A grayish-black powder with metallic lustre; rather light. It catches fire from a match only after being heated, and leaves a dark-red ash. It dissolves rapidly and completely in muriatic acid, emitting a bad smell, and blackening lead-paper. The solution is light green.

One gramme gave 1.215 of sesquioxide, representing a supposed proportion of 45.94 per cent. of metal.

0.40 gramme generated 44 c.c. of hydrogen, equal to 27.5 per cent. of iron.

0.50 gramme, macerated forty-eight hours with a solution of iodine in iodide of potassium, thrown on a filter and washed, first with water and then with alcohol, left a residue weighing 0.37 gramme, equal to 26 per cent. of metal.

No. 5. English; name of maker well and favorably known. Appearance: A moderately light powder of an intense black color. The sample will not catch fire from a lighted match under any circumstances, and can be heated to redness without any apparent change. When treated by muriatic acid the powder dissolves with very little effervescence, and forms a yellow liquid resembling the officinal tincture of muriate of iron. Of course no smell is perceptible during the operation.

One gramme produced 1.085 of sesquioxide of iron, which indicates (hypothetically) 12.94 per cent. of iron.

One gramme, treated by iodine, left a residue weighing 0.99 gramme.

Two grammes generated 6 c.c. of hydrogen, equal to about three-fourths of 1 per cent. of metal.

The No. 6 is put up by an American firm, but on inquiry it was ascertained that the article sold under their label was sometimes of their own make, and sometimes German or French. I incline to think that the samples examined are of German origin.

Appearance: A grayish-black powder, somewhat granular and heavy, with a metallic lustre. It is entirely dissolved by muriatic acid, with scarcely any sulphurous smell. It does not catch fire from a match, but behaves in regard to heat exactly like sample No. 2.

One gramme formed 1.197 of sesquioxide, equal to a supposed proportion of 41.37 per cent. of metal.

0.50 gramme generated 26 c.c. of hydrogen, equivalent to 13 per cent. of iron.

No. 7 was from the same firm as the preceding sample, but it was taken from the bottom of a vial, where a small quantity had probably been left untouched several months.

Appearance: The same as No. 6, but the powder is partly caked together.

One gramme produced 1.143 gramme of sesquioxide, which is supposed to indicate 27.66 per cent. of metallic iron.

There was not enough of the sample left to test by the gas process.

No. 8. Manufactured by a French house of good repute. Appearance: A light powder of a slate-gray color, resembling Quevenne's iron. It burns rapidly when fire is applied, and leaves a bright-red ash. It dissolves quickly and entirely in weak muriatic acid, with evolution of a fetid gas, which blackens lead-paper.

One gramme produced 1.21 of sesquioxide of iron, which indicates a theoretical quantity of 44.67 per cent. of metallic iron.

One gramme, macerated for twenty-four hours with iodine and iodide of potassium, left a residue which, washed with water and alcohol, and dried, weighed 0.77 gramme; this would correspond to 23 per cent. of iron.

0.50 gramme treated by the gas process yielded 62 c.c. of hydrogen, equivalent to 31 per cent. of pure metal.

No. 9. Alcoholized iron. The appearance of this preparation is too well known to need any description. It was only subjected to the gas-test.

0.25 gramme generated 98 c.c. of hydrogen, showing that the sample only contained 2 per cent. of impurities. The powder dissolved entirely in muriatic acid, forming a nearly colorless solution with a pale greenish tinge. The complete dissolution required some time, but the gas was almost odorless.

No. 10. A piece of piano wire, well free from rust and weighing 0.187 gramme, being treated by the gas process, generated 74½ c c. of hydrogen. This would show a percentage of 99.43 of iron, a result of unexpected accuracy, I would say almost accidental, for I believe the method is only reliable within an average of 1 per cent.

All the results are appended here in tabular form, in order to show better at a glance the differences between the various products. In the first column are the numbers of the samples, in the second the quantity of sesquioxide of iron formed by one gramme of the substance, and in the third the number of cubic centimetres of hydrogen evolved by one gramme of the same. The fourth indicates the apparent percentage of metal calculated from the sesquioxide obtained, and the fifth the same percentage deducted from the gas generated. The numbers given in the sixth column were reached by weighing the quantity of each sample necessary to fill the same glass tube, and comparing the weights to that of Quevenne's iron, that being taken as standard and called 10. The method is certainly far from accurate, yet the figures obtained are quite interesting and suggestive.

Iron by Hydrogen of Commerce. Comparative Table.

Number of sample.	Sesquioxide of Iron.	Hydrogen. Cub. centim.	Apparent per cent.	Real per cent.	Relative Density.
1 Quevenne's, . .	1.240	208	52.27	52	10
2. German, . . .	1.211	82.5	44.67	20.6	27
3. French, . . .	1.130	40	25 63	10	12
4. French, . . .	1.215	110	45.94	27.5	15
5. English, . . .	1.085	3	12.94	0.75	15
6. German, (?) . .	1.197	52	41.37	13	27
7. German, . . .	1.143	. . . .	27.66	10 (?)	...
8. French,. . . .	1.210	124	44.67	31	14
9. Alcoholized Iron,	. . . .	392	. . . .	98	32
10. Pure Wire, . .	. . . .	397.7	. . . .	99.43	...

Remarks.—As the British and the German Pharmacopœias appear to exact only 50 per cent. of metal in reduced iron, No. 1 may be said to be satisfactory, and No. 8 comes next to it in that respect; but when one takes into consideration that a 2-grain dose of these introduces into the stomach some 20 or 25 cubic centimetres of fetid gas, it becomes hard to decide which are the best, or rather the worst, the German and English products with their poverty in metal or the French irons with their sulphurous contamination. If, besides, we bear in mind the unreliable and extremely varying strength of the product supplied by the best manufacturers, the question is forced upon us: What is the advantage of iron by hydrogen over iron filings, or any other ferruginous preparation?

Other Processes for Making Reduced Iron.—Besides the officinal method, other processes are known and probably followed by manufacturers of reduced iron. An old way is to run a stream of carbonic oxide gas, instead of hydrogen, through the sesquioxide disposed in the usual manner. The reduction is said to be rapid and satisfactory; the product might be called *iron reduced by carbonic oxide.* Another method, not very new either, consists in heating oxalate of iron in a stream of hydrogen gas. When oxalate of iron is subjected to a sufficient heat in open air, it is first decomposed into carbonic acid, water, and metallic iron, but the finely divided metal is immediately oxidized again and burns with great brilliancy. If, on the contrary, the operation is conducted in hydrogen, the secondary oxidation cannot take place, and large quantities of reduced iron are thus rapidly prepared. However, the gas itself takes no part in the reduction: it acts simply as a non-supporter of combustion. The product, therefore, may probably be called *iron reduced by oxalic acid.*

Lastly comes the *iron reduced by cyanogen*, which is made according to an entirely different principle. It has long been remarked that a black powder containing iron is formed when cyanoferride of potassium is ignited with carbonate of potassa for the purpose of making cyanide of potassium. The powder in question was first supposed to be metallic iron, hence the suggestion was made by a German chemist to purify it by washing and to use it as reduced iron. Since then it has been found that the black powder is not iron, but the carburet of that metal. As, besides, cyanide of potassium is a powerful reducing agent, it occurred to Mr. Charles Maitre, in 1855, to take advantage of these facts to manufacture rapidly large quantities of reduced iron of tolerable quality. The secret of his process has been well kept, for it is only lately that I saw in *Cooley's Cyclopedia* a similar one, attributed to Mr. Arthur Morgan, which consists in mixing four parts of sesquioxide of iron with three parts of carbonate of potassa and eight parts of cyanoferride of potassium. The two last chemicals being dried and powdered, the whole is thrown by portions into a red-hot crucible, and the heat is continued until all effervescence has ceased; when cold the mass is powdered, washed and dried rapidly. Unfortunately the powder cannot be dried in that manner without almost complete oxidation. An important point is left out, which I shall explain presently. Maitre's formula was as follows:

Take of	Ferrocyanide of Potassium,	330 parts.
	Carbonate of Potassa,	90 "
	Sesquioxide of Iron,	150 "

Dry and powder the two first substances, mix with the oxide, and heat in an iron pot until effervescence ceases. Then throw the incandescent semi-fluid mass, by small portions, into boiling distilled water, and wash rapidly with enough of the same liquid; transfer the moist powder to a wide-mouth bottle and *shake it with strong alcohol*, when the product can be dried without fear of oxidation. The washings should contain nothing but cyanate of potassa, if the proportions are exact, which I would not warrant, and if the operation has been successful. The reduced iron thus obtained is usually of a fair color, and rich in metal, but it is rather heavy. Its principal fault is that it always contains more or less carburet of iron, which is easily detected by the smell of the gas evolved when it is treated by an acid. The metallic strength of this variety of reduced iron cannot be estimated from the volume of gas it produces, unless the proportion of carbon be first determined by one of the processes (chloride of copper, etc.) used for estimating carbon in cast iron. I have not met with any sample of the kind in the market.

Conclusion.—The United States Pharmacopœia gives excellent tests for iron by hydrogen, although no quantitative test is indicated; but I believe that, in that respect, our national Pharmacopœia has been wiser than some foreign authorities, for a doubtful test is worse than no test at all. This omission I would propose to remedy by adding, "one gramme . . . . . should at least generate 200 cubic centimetres of hydrogen," if, after trial by competent persons, the gas process is found sufficiently accurate and easy to manage.

In regard to the qualitative tests I would insist on a compliance with the demands of the Pharmacopœia. Iron by hydrogen *must* ignite when it is touched with a lighted taper, and produce an almost odorless gas when it is dissolved in an acid. This last condition ought to be made imperative. Pharmacists may, by insisting on it, compel manufacturers to furnish a better product, for the demand will always bring the supply.

WHAT IS CINCHO-QUININE?*

(ANSWER TO QUERY 5.)

BY ALBERT E. EBERT, CHICAGO.

THIS query having been referred to me for answer by the Association, I have the honor of submitting the following:

"Cincho-Quinine." Although the history of this nostrum may not be very instructive, it may, nevertheless, be interesting. It first made its appearance in 1869, shortly after the début of "sweet quinine," and its originator, like that of "sweet quinine," was a member of this Association, but he lacked the moral stamina of Mr. Stearns, and chose rather to resign his membership than stand a trial under the code of ethics of this Association, his very lame excuse for resignation being *inability to attend the annual meeting.* This action on his part was not to be regretted by the Association, as it relieved it from the unpleasant duty of expelling him.

At the time of its first introduction the manufacturers of

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* Read at the Third Session.

"cincho-quinine" published a statement that its chemical composition was: 1. Quinine; 2. Cinchonia; 3. Quinidia; 4. Cinchonidin; 5. Other alkaloidal principles present in the barks.

In March, 1870, Mr. W. T. Wenzell, of San Francisco, Cal., a member of this Association, read a paper before the California Pharmaceutical Society, in which he gave the result of a chemical investigation he had made of this nostrum, and in summing up he says: "In reviewing the experiments and results, in connection with James R. Nichols & Co.'s circular, we unhesitatingly arrive at the following conclusions: 'Cincho-quinine,' although having the advantage of being nearly tasteless, does not contain quinia, quinidin, and cinchonidin, and therefore does not represent the whole of the active principles of the bark. It cannot exert the full effects of sulphate of quinia in the same dose, inasmuch as the stated dose of 'cincho-quinine' is from five to thirty grains. Although 'cincho-quinine' appears to cost less than sulphate of quinia, it does not follow that commercial 'cinchonia,' sold at four times its value, is a desirable substitute for quinine in an economical point of view." It was generally supposed that this exposure of the composition of "cincho-quinine," which showed it to be an imposition, would have the desired effect upon the members of the medical profession, so that its use by them would be discontinued. But in this we were disappointed, for we had not taken into consideration the cunning and shrewdness of its proprietors, who were well aware of the power of printers' ink, and at once set to work to muzzle the medical press of this country. This they accomplished, with but few honorable exceptions, by promises of extensive advertising patronage, and thus the publication of Mr. Wenzell's article was limited to the then few existing pharmacal and the few medical journals who could not be bought by their promises. Having so well succeeded in preventing the general publication of the article, and appreciating the well-known maxim that the only way to sell nostrums is to advertise them, they at once set about it, in a systematic manner, by feeding the medical press with laudation of the medical properties of "cincho-quinine," and its superiority in this respect over quinine. The only effect Mr. Wenzell's examination seemed to have upon the manufacturers of the nostrum was to change their statement of its composition, which was *now* claimed to be "a combination of the different alkaloidal principles of Peruvian bark presented in their native alkaloidal condition. The alkaloid cinchonia *predominates;* next in amount is quinia; then quinidin, and then follow all the other of the medicinal principles found in the barks."

As time wore on the proprietors of this nostrum became more bold, and required each medical journal whom they favored with a page of advertisement to give the article an editorial "puff," or an indorsement, by reprinting, *as selected matter*, in the respective medical publications, a communication of several pages in length, extolling the virtues of this nostrum, which essay had appeared in an advertising sheet, published by this firm, the *Boston Journal of Chemistry.* The prostitution of the medical press for such dishonorable purposes was very properly called attention to by an editorial upon the subject in the *Medical Record* of New York City. This had an effect of checking the evil, but the lull was of short duration, for the sagacity of the projectors of the nostrum had as yet not been exhausted. The next step was the securing of medical testimony regarding its miraculous virtues: this was probably furnished by some medical *hireling*, who possessed some smattering of the science of medicine, or it was manufactured out of whole cloth at the "laboratory." This testimony appeared as an original contribution to medical science, extolling in the most forcible language the superiority of "cincho-quinine," in combating disease wherever quinine is indicated, and this "paid puff" is at present going the rounds of the medical press on the terms mentioned above, or to repeat substantially the wording of the "bait" held out to the medical press, *If you insert among the reading matter of your journal this article, we will give you a page of advertisement for your publication.*

In an "editorial" in the August number of the *Pharmacist* we again called the attention of the medical press to the *evil* of inserting this communication, which was but an advertising dodge of this house for furthering the use of the nostrum. For this honorable intention upon our part we have been rewarded by the following editorial remarks, which we extract from the *Nashville Journal of Medicine and Surgery*, the senior editor of which is William K. Bowling, M.D., President of the American Medical Association. "In common with nearly all the medical journals of the country we admitted into our advertising columns the advertisement of 'cincho-quinine' from the house of Billings, Clapp & Co., of Boston, who are eminent practical chemists, and are the proprietors of the *Boston Journal of Chemistry*. 'Cincho-quinine' is a white tasteless preparation, said to contain all the alkaloids of the cinchona bark, as quinia, cinchonia, quinidin, etc., but probably devoid of quinia.—Dunglison. We always thought it was the legitimate business of the chemist to extract the alkaloids from crude substances, for the use of physicians, until otherwise informed by the *Chicago Pharmacist*. We have been advertising and using the various alkaloids thus extracted for years, without being aware that we were aiding and abetting nostrum-mongers. 'Cincho-quinine' is, in no sense of the word, a quack medicine. It is a legitimate product of one of our most valuable medicines, Peruvian bark, obtained by legitimate chemical process, and is no more a quack medicine than is quinine, cinchonia, etc. It sells for about one-half the price of quinine, and possesses about the same value as that article in controlling intermittent fevers, according to the statements of those who have used it. This was a desideratum which had been sought since the introduction of quinia. Physicians living in malarious countries generally have to supply the medicine to the sick, whether they get anything for it or not; so that an article possessing about the same power to control malarial fevers, at half the price of the usual remedy, was, indeed, an object."

To this effusion of wisdom (?) coming from one who pretends to know, *and he should know*, for he is a teacher of the science of medicine, we have no further comments to make, for it tells its own story too well, and we will bring the history of "cincho-quinine" to a close.

Regarding the chemical composition of "cincho-quinine," as at present found in the market, we have subjected seven samples of this nostrum to a chemical and chemico-microscopical examination. Some of these samples were obtained direct from the manufacturer, others original bottles of the market, and the balance from dispensing stores where it was kept on hand. In every case the examination for quinia, and its separation from the alkaloid cinchonia, was carefully made, following closely the processes and tests as laid down by the best modern authorities, but not in one instance have we been able to discover a trace of quinia. When Stoddart's chemico-microscopical test for the alkaloids of cinchonia, with a magnifying power of three hundred and sixty diameters, was employed, the field presented only the alkaloid cinchonia, without the presence of any other alkaloid of the cinchona bark.

All the chemical tests made yielded the same result, and, therefore, fully indorse the former statement of Mr. Wenzell, saying that "cincho-quinine" is the alkaloid cinchonia, and not an alkaloidal representation of cinchona bark. Therefore, if the medical testimony regarding the medicinal virtues of "cincho-quinine" are correct, it will become the medical press, at once, to call attention to the use of the alkaloid cinchonia, which can be furnished by the manufacturers of sulphate of quinine at one-fifth the cost as at present furnished by the proprietors of "cincho-quinine," who put it up under this improper name.

Therefore, in answer to the query, What is "cincho-quinine?" we will state that our experiments determined it to be simply the alkaloid cinchonia, which has been precipitated from sulphate of cinchonia by means of some alkali or alkaline carbonate, washed and dried between cloths, with pressure, thereby producing it in the form of scales.

ON COLCHICIA.*

BY OTTMAR EBERBACH.

AT the twentieth annual meeting of the American Pharmaceutical Association, held at Cleveland, Ohio, the following query, No. 13, was referred to me:

"Does not the acknowledged value of colchicum, and its liability to vary in activity, suggest the preparation of a working formula for medicinal colchicia as a new pharmaceutical?"

I should have answered this query at the gathering of the Association in Richmond last year, but owing to inflamed eyes, caused by colchicia during my investigations, it was impossible for me to meet expectations. I will try to answer at this twenty-second annual meeting.

To decide in favor of one or the other of proposed methods for isolating colchicia, it was necessary to give them all a trial. After experimenting according to the process of Carter, Huebler, and Geiger, a method based on the solvent properties of chloroform on alkaloids in an alkaline solution was tried and adopted for further investigations.

The colchicum seeds proving to be the most productive, the experiments were made with such only, according to the following process: One pound of the seeds were crushed, digested for forty-eight hours with alcohol (85 per cent.), having it placed into a glass percolator and the liquid drained off; alcohol (85 per cent.) containing one-quarter per cent of sulphuric acid was introduced until exhausted. To remove the sulphuric acid and coloring matter milk of lime was added, and put aside for twelve hours. The liquid was then filtered, neutralized with sulphuric acid, filtered, the whole put into a still, and the alcohol distilled off, the residue evaporated on a water-bath to a syrupy consistency, diluted with water, and separated from oily matter. The clear liquid, supersaturated with ammonia, was set aside for an hour and filtered. Chloroform is now added and the mixture repeatedly shaken, the chloroform solution after subsiding is separated, the alkaline solution extracted with fresh portions of chloroform until no residue is left on evaporating a small quantity of the liquid. All the chloroform solutions mixed are placed into a retort and the chloroform distilled off. Digest the remaining residue in water slightly acidulated with sulphuric acid, filter, neutralize with ammonia, let stand for half an hour, filter, add ammonia until distinctly alkaline, and exhaust with chloroform as before. Let the chloroform solutions evaporate spontaneously. The colchicia remains in the form of a yellow transparent varnish-like mass, easily removed with a spatula. As thus obtained it is amorphous, in form of yellow scales, of a very light-yellow color when powdered, becoming darker on exposure to direct light. It is intensely bitter, has but a little odor, is readily soluble in alcohol and chloroform, sparingly in pure ether; slowly soluble in cold water, more readily by applying heat, forming a clear solution. The solution exposed to direct sunlight for several weeks loses its yellow color, becoming lighter and receiving a tinge of brown, losing its behavior towards reagents, peculiar to colchicia and alkaloids generally. Its watery solution is turned bright yellow by mineral acids, slightly tinged by oxalic acid, not affected by acetic acid; alkaloids turn it to a deep yellow. It forms precipitates with tannic acid, chloride of gold, phosphomolybdic acid, Lugol's solution, and chlorine matter; produces faint cloudiness with iodohydrargyrate of potassium. It is not precipitated with solution of red oxide of mercury in iodide of potassium, corrosive sublimate, bichloride of platinum, subacetate of lead, sulphate of copper, and bichromate of potassa. Solution of sesquichloride of iron produces no reaction at first, but when allowed to stand will show a green coloration.

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* Read at the Fourth Session.

The white precipitate produced with chlorine-water disappears by applying heat, forming again on cooling; ammonia dissolves it immediately. The brown precipitate formed with Lugol's solution is not soluble in an excess of the reagent; it is soluble by heat; ammonia dissolves it, forming a slightly yellow-colored solution. Concentrated sulphuric acid dissolves it with a yellow color. If to this a small crystal of nitre is added the crystal becomes surrounded with a blue zone, which rapidly passes into various shades of violet, then to brown, pink, and finally to yellow. If ammonia is now added the solution turns to an onion red, which is discolored by acids, but reappears on the addition of ammonia; if allowed to evaporate spontaneously, a violet-colored crystalline mass remains.

A strong aqueous solution will restore reddened litmus-paper to blue; the same result is obtained by rubbing dry colchicia on moistened red litmus-paper; one-eighth of a grain added to five or six drops of sulphuric acid, so diluted as to give a faint but decided acid reaction on litmus-paper, will render it alkaline to test-paper. These experiments evidence the alkaline character of the colchicia obtained.

The quantities of colchicia obtained by assaying the seeds procured from seven different establishments ranged from 12 to 15 grains to the pound avoirdupois, making an average yield of .19 per cent. Considering the above result, the question advanced in the query will have to be answered with reservation, the small quantity existing in the crude drug, consequently the high price, would make it unattainable for the physician in everyday practice, and its isolation would only be justified if it will prove to possess advantages as a remedial agent not attainable by colchicum root or seeds. Its best source is colchicum seeds, and a good process is the above-given formula. The process is simple and easily executed, and if colchicia should be found desirable as a remedial agent it can be attained with the same advantages as hyoscyamia or aconitia.

The inference made from my experiments on the watery and acidulated solution of colchicia when exposed to light, as also from experiments made by others, is that the alkaloid gradually changes. probably into resin and colchicein, but not having as yet been proved that the latter is in any degree less effectual as a remedy, and it being a matter of great importance to the practitioner to have a uniform preparation of the active principle of so valuable a remedy, I will not propose a new formula, but would suggest that the officinal liquid preparations be brought to a uniform standard strength in the amount of colchicia contained in 16 fluid ounces of the preparation; the writer makes this proposition so as not to increase the number of formulas advanced unnecessarily. This would be attained by taking the average percentage of colchicia contained in the crude drug as a basis, and then adjusting the quantity of the drug necessary for the quantity of preparation to be made, which can be done by assaying the drug to be used.

Taking the above average result, .19 per cent., as a basis, 16 fluid ounces of the officinal tincture and wine of colchicum would have to represent $1\frac{3}{8}$ grains of colchicia, and 16 fluid ounces of fluid extract of colchicum, 11 grains. This would probably be as good, perhaps better and more reliable, a preparation than the alkaloid for medicinal use.

P. S.—After numerous attempts during my investigations to crystallize colchicia, but always obtaining it in an amorphous state, as represented above, this essay was written. Afterwards dissolving some of the colchicia in chloroform with the object of obtaining it in scales, I succeeded in crystallizing it. Out of very concentrated solutions colchicia crystallizes in fine tufts of transparent silky needles.

SANTONIN.*

BY FRED. HOFFMANN, PH.D.

QUERY 35.—What is the state of purity of commercial santonin obtained from various sources?

THE property of santonin to become yellow on exposure to the solar light, and of its solution in alcohol to assume a scarlet color upon the addition of an alcoholic solution of potassium hydrate, as also its ready solubility in chloroform, benzol, lime-water, and solutions of the alkaline hydrates, are characteristics which render santonin easily recognizable; while its comparatively low price, abundant supply, and limited consumption do not offer special inducements for adulterations and fraud.

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* Read at the Third Session.

Its form and appearance, however, and its similarity with several medicinal alkaloids, admit, and have repeatedly occasioned, incidental mistakes.

Twenty-two specimens of santonin, fifteen from stores in New York, five from country stores in New York and Pennsylvania, and two from Louisville, Kentucky, were obtained, all in small flattened prisms or fragments thereof; their identity was determined by means of the above-stated characteristic physical and chemical properties of santonin, and the state of their purity ascertained by the following tests:

1. Five grains of the sample were added in a dry test-tube to about two fluid drachms of pure concentrated sulphuric acid, and the mixture gently warmed by immersing part of the tube into hot water. As in no instance any coloration or reaction took place, the test was continued by the addition of about one-fourth of a grain of powdered potassium bichromate (a green coloration with the latter reagent would indicate cinchonia or its salts, a bluish-violet one successively changing to violet, red, and finally to yellow, would indicate strychnia or its salts).

2. Five grains of the sample were added in a test-tube to one fluid drachm of tepid water, acidulated with two drops of acetic acid; the mixture was frequently shaken, and after about one hour, transferred upon a moist filter; the filtrate was divided into two equal parts, and tested for alkaloids, the one with a few drops of test solution of tannic acid, the other with one drop of test solution of picric acid.

3. Five grains of the sample were added in a dry test-tube to about one fluid drachm of chloroform; only one of the samples did not afford a complete solution.

In order to ascertain the nature of the substance insoluble in chloroform, which also had already been observed in the tests for identity by its remaining white in the solar light, fifty grains of this sample of santonin were completely exhausted by successive agitation and subsequent decantation with small quantities of chloroform; the remaining crystalline residue was collected in a small tared porcelain capsule, and dried at a gentle heat not exceeding 100° F.; when dry its weight was ascertained; while on the other hand, the carefully collected chloroform containing the santonin in solution was evaporated in a tared porcelain capsule upon a water-bath, and when dry, the weight of the santonin was also ascertained; upon the subsequent application of the above-stated tests for identity it proved to be pure santonin. The crystalline residue insoluble in chloroform, and left upon the first capsule, was then divided into two equal parts, one of which was dissolved in a test-tube in about two drachms of warm distilled water; the obtained solution was divided into three parts, one of which was tested for metals with hydrosulphuric acid, and subsequent supersaturation with aqua ammoniæ; the other two were each acidulated with a few drops of diluted nitric acid, and tested separately, the one with one drop of test solution of barium nitrate for sulphates, and the other with one drop of test solution of argentic nitrate for chlorides. The rest of the residue left upon the first capsule was tested with moistened turmeric-paper, and about half a drachm of strong alcohol was then added, and this ignited, and the mixture gently stirred with a small glass rod; a brown coloration of the test-paper on drying, and a green color of the flame, both upon the glass rod when lifted, and upon the capsule, especially conspicuous at the end of the inflammation or upon extinguishing the flame and rekindling it, indicated boric acid; the nearly white residue was then transferred from the capsule upon platinum-foil, and fused at a strong red heat; it rendered an almost colorless vitreous fuse of boric acid.

All the specimens examined proved to be pure santonin except one from Louisville, Kentucky, which, according to the methods of examination as described in section 3, consisted of a mixture of 78 per cent. of santonin, and 22 per cent. of boric acid.

In relation to the mode of obtaining samples for examination, in pursuit of such queries as require a critical research as to the identity and purity of chemicals and drugs, it may not be out of place to call attention to the inadequate and unavailing manner hitherto in use, involving the necessity on the part of the expert of applying for such samples to manufacturers and druggists or to fellow-pharmacists. This method, even if successful, will hardly furnish an average representation of the market stock; still less will it reach those quarters where inferior or adulterated articles are most likely to be found. Moreover it is unpleasant, and certainly not encouraging, to enter upon a task without a fair prospect of real usefulness, or to encroach upon the kindness and discretion of others, by hunting for dubious or inferior articles; for these, both duty and self-interest should lead every pharmacist and druggist at once to examine, and if found wanting, to reject or to return to the seller; and if for any reason hindered from conducting the examination, or in case of doubt, they should avail themselves of the service of the Committee on Adulterations, by sending a sample to the same.

The object and aim of this class of queries as offered by the Association, as well as that of the aforesaid committee, is evidently not to exercise an arbitrary control of the drug market, but rather to extend to the trade and the profession a friendly and ready hand for gratuitous co-operation in the critical scrutiny of medicinal chemicals and drugs as to their identity, quality, and purity; and in this way to assist in securing and maintaining the good standard of our drug market.

It would seem that this fact and the practical value of these measures of the American Pharmaceutical Association, are either not generally understood or not deservedly appreciated, else they would meet a wider and spontaneous response from druggists as well as from pharmacists in their own mutual interests. With many of these queries the result of the labors of the inquirers is, for this reason, at best, an unsatisfactory one, and of but limited practical consequence. It might, therefore, perhaps be timely and proper for the Association, in some suitable way to call anew the attention of the profession and the trade, to the aim and the importance of this subject, and thereby to endeavor effectually to promote one of the last, but not least of its features of usefulness.

New York, September, 1874.

PURIFICATION OF OLEIC ACID.*

BY CHARLES RICE.

QUERY 11.—Oleate of mercury has lately occupied the attention of pharmacists, and many processes for its preparation have been proposed. How may oleic acid be readily and rapidly prepared in a condition sufficiently pure for preparing oleate of mercury?

AMONG the processes which have been proposed to obtain oleic acid sufficiently pure for the preparation of oleates in general, and oleate of mercury in particular, the following are the chief ones:

(1.) The process published in Am. Jour. Pharm., 1873, p. 1, by myself, which, however, effected only a separation of the portion remaining liquid between 40° and 50° F. from the more solid portion. Its defects became apparent after a time, for it was found almost impossible to effect solution of mercuric oxide without reduction. Now and then I succeeded in obtaining a small lot of very light-colored crude oleic acid, of which one lot in particular gave no reduction whatever; but I could not again obtain any more of it.

(2.) The method proposed some time ago of separating the oleic acid from castile soap. This process yields a tolerably handsome product, by dissolving *white* castile soap in water with the aid of heat, filtering, and, when *cold*, decomposing the solution with acetic acid, then separating the liberated fatty acids, and eliminating the portion remaining liquid at 45° F. The yield, however, is not very large.

(3.) Mr. L. Dohme's process (Am. Jour. Pharm., 1873, p. 158), which, although not separating the acid itself, still deserves mention here, as it yields a tolerably good product, when properly managed. Mercuric oxide being dissolved in nitric acid, and the commercial oleic acid in a hydro-alcoholic solution of potassa, the first solution is added to the second, the resulting oleate of mercury washed, and finally made up with oleic acid to the desired bulk.

(4.) A process published in the Am. Jour. Pharm., 1873, p. 97, by "F. & H.," which, however, is much too circumstantial, and very unsatisfactory in yield. It is a combination of several processes proposed for obtaining *pure* oleic acid, which is not so well adapted to the preparation of oleates on account of its dense consistence, at least for pharmaceutical purposes. The acid, when prepared according to the directions given, is not at all "thinner than almond oil;" on the contrary it is quite dense and prone to crystallize. A liquid, although less pure acid, is much preferable. For the sake of comparison I place here an outline of the principal methods for preparing the pure acid.

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* Read at the Second Session.

(*a.*) Varrentrap's (Ann. Pharm., vol. 35, p. 196; Gmelin, xvii, 63). Crude oleic acid is filtered at 0°, and converted into lead-salt; this is decomposed, the oleic acid set free, saponified with an alkali, and salted out with sodic carbonate and chloride.

(*b.*) Berthelot's (N. Ann. Chim. Phys., vol. 41, p. 243; Gmelin, xvii, 64). The crude oleic acid is twice filtered at 0°, neutralized with caustic potassa, dissolved in two parts alcohol, filtered cold, and precipitated with baric chloride; the precipitate is dried, boiled repeatedly with alcohol, and the salt which is deposited on cooling recrystallized once or twice from alcohol. It is then decomposed by tartaric acid, and the separated oleic acid is washed with water.

(*c.*) Bromeis's (Ann. Pharm., vol. 57, p. 38; Gmelin, xvii, 63). The crude acid is converted into the lead-salt, the lead-salt is decomposed, and the acid set free is cooled in small portions down to 6° or 7°, when it solidifies to a crystalline mass, which is pressed between folds of blotting-paper. The solid and purer acid is thus separated from the fluid portion, which contains oxidized products. By repeatedly melting, cooling, and pressing the crystalline portion, at last with the addition of a little alcohol, the impurities are completely removed.

The desired aim is to obtain an acid which is liquid at ordinary temperatures, and is as free as possible from oxyoleic acid and coloring matter. After many trials and failures I finally succeeded in obtaining a satisfactory result by the following process:

Take of commercial oleic acid ("red oil") any convenient quantity. Expose it repeatedly to a temperature of about 45° F., and express the liquid portion.* Mix this with an equal bulk of sulphurous acid solution, place it in the light, and shake frequently until no more color is discharged. A crude acid, which was prepared from clean and fresh fats, and collected as the first run from the hydraulic press, before the pressure had been raised high, will discharge nearly all its color; generally, however, the result is an acid of a light straw color. Finally the oleic acid is separated, washed repeatedly with cold distilled water, and put into bottles, which should be kept full and in a cool place. Oleic acid thus prepared dissolves metallic oxides readily and completely, and mercuric oxide without reduction.

In conclusion I would state, that in making oleate of mercury, it is essential to use only such mercuric oxide as is *thoroughly dry*, and to sift it in small portions at a time upon the surface of the oleic acid, each fresh portion being well incorporated before another is added. Only in this way can an intimate mixture be made of the acid and the oxide, which latter has a great inclination to cake, thereby diminishing the surface upon which the acid could act. Solution should be promoted by frequent stirring, at ordinary temperatures, since experience has shown that all heating is positively injurious.

NEW YORK, August 20th, 1874.

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* Dr. E. R. Squibb stated to the writer that he finds it preferable to cool the crude acid first to 60° F., the liquid product of this to 50° F., and the remaining liquid product to 45° F.—C. R.

MINUTES

OF THE

TWENTY-SECOND ANNUAL MEETING.

First Session.—Tuesday, September 8th, 1874.

The American Pharmaceutical Association met at its Twenty-second Annual Meeting in Liederkranz Hall, Market near Second Street, in the city of Louisville, Kentucky, at 3 o'clock on the afternoon of September 8th. President John F. Hancock in the chair; John M. Maisch, Secretary.

A quorum being present, the President called the meeting to order, and appointed Mr. George W. Kennedy, of Pottsville, Pa., to act in place of the Executive Committee, none of the members of which, with the exception of the Secretary, being in attendance. The President likewise appointed the following Committee on Credentials: Messrs. Paul Balluff, of New York; Joseph Roberts, of Maryland; and William Saunders, of Canada.

The committee having retired to attend to the duty assigned them, the Secretary read a letter from Mr. E. A. Maginness, Secretary and Superintendent of the Louisville Industrial Exposition, extending an invitation to the members of this Association to visit the Exposition free of charge, admission being obtained upon showing the badges provided by the Local Committee of Arrangements for the members attending this meeting. It was stated that the invitation included also the ladies of the members if accompanied by them.

The invitation was, on motion of Mr. J. F. Moore, accepted, and the Secretary directed to acknowledge the communication, expressing the thanks of the Association for this kindness.

On motion of the Business Committee, it was

Resolved, That the medical profession of Louisville and vicinity, the professors in the medical colleges and of the Louisville College of Pharmacy, and Professor J. Lawrence Smith, be invited to take seats in the present meeting of this Association.

Mr. Balluff then read the following report:

The Committee on Credentials respectfully report the following names of delegates duly appointed by their respective associations to represent them at this Twenty-second Annual Meeting of the American Pharmaceutical Association.

Philadelphia College of Pharmacy.—Wilson H. Pile, Joseph P. Remington, Alonzo Robbins, Edward C. Jones, Joseph L. Lemberger.

Massachusetts College of Pharmacy.—Samuel M. Colcord, Augustus R. Bayley, George F. H. Markoe, B. Frank Stacey, I. Bartlett Patten.

College of Pharmacy of the City of New York.—Paul Balluff, Moses L. M. Peixotto, Gustavus Ramsperger, William Neergard, P. Wendover Bedford.

Maryland College of Pharmacy.—J. Faris Moore, Louis Dohme, John F. Hancock, Ferdinand Hassencamp, Joseph Roberts.

Chicago College of Pharmacy.—Ezekiel H. Sargent, Albert E. Ebert, Thomas N. Jamieson, C. Gilbert Wheeler, George Buck.

Louisville College of Pharmacy.—Emil Scheffer, Frederick C. Miller, S. Fisher Dawes, Vincent Davis, William W. Smith.

Cincinnati College of Pharmacy.—John F. Judge, Thomas L. A. Greve, George Eger, Charles Faust, Jacob D. Wells.

Ontario College of Pharmacy.—William Saunders.

Tennessee College of Pharmacy.—Benjamin Lillard, James M. Safford, Thomas Black, A. Hyman S. Wiltse, James D. Kerley.

National College of Pharmacy, Washington, D. C.—William S. Thompson, Giles G. C. Simms, John R. Major, J. S. Jones, W. G. Duckett.

Literary and Scientific Society of the German Apothecaries of the City of New York.—Paul Balluff, Gustavus Ramsperger, Charles Eimer.

New Jersey Pharmaceutical Association.—Julius Fehr.

Newark Pharmaceutical Association.—Charles W. Badger, Charles H. Dalrymple, Andrew M. Mills, Ernest Dreher, Charles Holzhauer.

Lexington Pharmaceutical Association.—John S. Wilson, Marcus D. Richardson, Henry A. Ridgely, Theodore B. Wood, John J. Frost.

New Hampshire Pharmaceutical Association.—Charles A. Tufts, Joseph H. Thatcher, Charles E. P. Hildreth, George F. Underhill, Charles S. Eastman.

Indianapolis Pharmaceutical Association.—Walter S. Brown, Ross W. Perry, George W. Sloan, Hiram B. Cole, Emil Martin.

Richmond Pharmaceutical Association.—Hugh Blair, Polk Miller, T. Roberts Baker, Ira W. Blunt, Henry Bodeker.

St. Clair Pharmaceutical Association of Southern Illinois.—William Fieckert, William Kempf, Jr., Alexander G. F. Streit, Charles Muehlheims.

Washington Pharmaceutical Association.—William T. Baldus, Edward M. Taber, Charles G. Price, John T. Cole, George R. Reynolds.

Alumni Association of the Philadelphia College of Pharmacy.—Richard V. Mattison, George W. Kennedy, Herman A. Vogelbach, Charles B. Allaire, Henry N. Rittenhouse.

Alumni Association of the Massachusetts College of Pharmacy.—Charles A. Tufts, Charles P. Orne, Thomas Doliber, Jeremiah T. Leary, Edward C. Boyden.

Alumni Association of the College of Pharmacy of the City of New York.—William Wright, Jr., Philip A. White, Hampden Osborne, P. W. Bedford.

Signed,
Paul Balluff,
William Saunders,
Joseph Roberts.

The report was, on motion, accepted, and the gentlemen admitted as delegates, when the Secretary stated that six pharmaceutical associations were for the first time represented at this meeting; namely, those of Lexington, Ky., New Hampshire, Indianapolis, Ind., Richmond, Va., Washington, D. C., and the St. Clair Pharmaceutical Association of Southern Illinois.

The President.—We are very glad to welcome these new associations and their delegates into our meetings; we hope that they may be apostles in the future, and that our Association may receive from them as it has from other associations valuable assistance.

The Secretary called the roll, when sixty members answered to their names.

The Executive Committee reported the names of the following sixty-eight candidates for membership, they having complied with the requirements of the By-laws.

Alabama.

W. F. Punch, Mobile.

District of Columbia.

Charles Christiani, Washington.

Indiana.

William C. Bunting, Terre Haute.
Frank C. Dale, Logansport.
Frank M. Harper, Madison.
Henry C. W. Hisner, Fort Wayne.

Kentucky.

W. H. Averill, Frankfort.
G. E. Bell, Louisville.
Henry Kielhorn, Louisville.
F. Lingelbach, "
Arthur Peter, "
Edward C. Pfingst, "
H. Adolph Pfingst, "
W. Rogers, M.D., "
William G. Schmidt, "
G. W. Zwick, Covington.

Maryland.

William Partlow Thompson, Baltimore.
E. Woodward, Baltimore.

Massachusetts.

Charles P. Alder, Springfield.

William H. Griswold, North Adams.
George H. Parker, Andover.
Warren Smith, Chicopee.

New Hampshire.

Charles S. Eastman, Concord.
Henry B. Foster, "
Charles F. E. Hildreth, Allenstown.
Parker J. Noyes, Lancaster.
Alonzo T. Pinkham, Dover.
B. Frank Rackley, "
George F. Underhill, Concord.
William H. Vickery, Dover.

New Jersey.

Wickham N. Harlow, Orange.
Louis Miller, Mount Holly.

New York.

George S. Ballard, Utica.
James L. Belden, Sand Bank.
H. B. Chamberlain, Syracuse.
Eldridge W. Close, M.D., New York.
W. H. Daycock, Brooklyn.
William Falke, New York.
William H. Griffith, "
John W. Howarth, Utica.
Alexander King, Buffalo.
Charles J. Lawlor, Brooklyn.
Louis Lehn, New York.
James McDougall, Port Jervis.
Anley W. Peck, Mount-Vernon.
Henry Schmid, New York.
Daniel W. Seward, New York.

Pennsylvania.

Henry Augustus Borell, Philadelphia.
George Irwin McKelway, "
Charles L. Mitchell, "
Wallace Procter, "
Charles C. Spannagel, "

South Carolina.

George W. Aimar, Charleston.
Edward S. Burnham, "
A. W. Eckel, "
Lingard A. Frampton, "
William A. Gibson, "
C. O. Michaelis, "
Charles F. Pauknin, "

Texas.

L. Myers Connor, Dallas.
Thomas W. Powell, Houston.

West Virginia.

Edmund Bocking, Wheeling.
Thomas J. Finney, "

Wisconsin.

E. B. Heimstreet, Janesville.
Alfred Senier, Jr., Mazomanie.
Frederick S. Senier, "

Messrs. R. V. Mattison and George E. Cook were appointed tellers, and reported the unanimous election of the candidates.

Reports of committees being called for, the following were found in readiness and laid upon the table for future action:

Report of the Executive Committee, with the report of the Permanent Secretary.

Report of the Committee on the Drug Market.

Report of the Committee on Papers and Queries.

Report of the Committee on Unofficinal Formulas.

Report of the Committee on Adulterations and Sophistications.

Report of the Committee on Legislation.

Report of the Committee on Photographic Album.

The Nominating Committee was now appointed, one representative being named by each delegation.

Massachusetts College of Pharmacy,	S. M. Colcord.
New York " "	M. L. M. Peixotto.
Philadelphia " "	W. H. Pile.
Maryland " "	J. F. Moore.
Chicago " "	A. E. Ebert.
Louisville " "	E. Scheffer.
Cincinnati " "	J. D. Wells.
Ontario " "	Wm. Saunders.
Tennessee " "	Benj. Lillard.
National " " at Washington,	J. A. Milburn.
Literary and Scientific Association of the German Apothecaries of New York,	Charles Eimer.
New Jersey Pharmaceutical Association,	Julius Fehr.
Newark " "	None present.
Lexington " "	John J. Frost.
New Hampshire " "	C. A. Tufts.
Indianapolis " "	George W. Sloan.
Richmond " "	Ira W. Blunt.
St. Clair " "	A. G. F. Streit.
Washington " "	Wm. P. Baldus.
Alumni Association, Philadelphia College,	Geo. W. Kennedy.
" " Massachusetts "	Charles P. Orne.
" " New York "	Wm. Wright, Jr.

In addition to these the Chair appointed the following members, who were not present as delegates: W. F. Nick, of Erie, Pa.; Alfred S. Lane, of Rochester, N. Y.; Charles A. Heinitsh, of Lancaster, Pa.; A. S. White, of Mount Holly, N. J.; and Gustavus Mallinckrodt, of St. Louis, Mo.

The President appointed the following committee to examine and report on the specimens exhibited at the present meeting: James T. King, of Middletown, N. Y.; T. N. Jamieson, of Chicago, Ill.; A. R. Bayley, of Cambridgeport, Mass.; Clay W. Holmes, of Wilkesbarre, Pa.; and Vincent Davis, of Louisville, Ky.

The Secretary read the reports of the Executive Committee and of the Permanent Secretary, which were, on motion, accepted and referred for publication.

REPORT OF THE EXECUTIVE COMMITTEE.

The Executive Committee respectfully report that the Twenty-first Volume of the Proceedings of our Association was issued in April last, and it is with regret that so many causes of delay entirely beyond their control should have produced this tardiness.

The committee have registered all the applications which have been made to them for membership, with their vouchers attached, and they will be reported at the proper time.

The neglect of so many of our members to pay their annual subscriptions is the cause of much unnecessary work and great delay to the treasurer in completing his list.

The committee have never been charged with the duty of reporting the names of so many of our members upon the roll of death, two of them having occupied the chair of President of our Association, and their names have been long familiar to the trade as authorities in drug business and in the pharmaceutical profession.

Of some the mere fact of their decease has reached us; of others we append notices such as seemed suitable.

N. C. PETTIS, of North Adams, Mass., died November 20th, 1873. He was born in New Marlboro, Mass., in 1843, studied his business from 1860 to 1866, and attained a deserved eminence in it. He purchased the store of his preceptor, and gave great satisfaction to those who dealt with him. His death was much lamented by the community in which he lived. His membership with us dates from 1868.

J. C. R. FULTON, of Brooklyn, N. Y., died April 14th, 1874. He was a native of Richmond, Va., and attended the meeting of our Association last year. He was educated to his business by Mr. Thomas Jones, of Brooklyn, with whom he remained most of his time. His death was very unexpected from malignant scarlatina.

MICHAEL S. MCCONVILLE, of Worcester, Mass., died in 1873. He became connected with our Association in 1859.

JAMES MCBRIDE, of St. Louis, died in January, 1873. He was elected a member in 1864.

JOHN SCOTT, of Cincinnati, Ohio.

CHARLES P. JOHNSON, Memphis, Tenn.

CHARLES F. UHL, Memphis, Tenn.

ROBERT PLATZER, born near Leipzig, Germany, March 13, 1826. Brought up to mercantile pursuits at first, and afterwards in drug houses, he became a pharmacist. Was employed in Philadelphia, after leaving his native land in consequence of his connection with the struggles of his countrymen for freedom. He then went to Richmond, Va., and afterwards settled in Philadelphia in business, but after suffering for over a year with pulmonary disease he died of dropsy. A widow and four children survive him. He became a member of our Association in 1865.

WILLIAM PROCTER, JR., died on the morning of the 10th of February. After a very interesting lecture, which was greatly enjoyed by the class, and which enjoyment he was particularly pleased with, he went home and conversed till a late hour with his wife. Upon retiring his breathing attracted the notice of his wife, who called for assistance, but before medical aid could be procured his spirit had fled.

Prof. Procter was the ninth and youngest child of Isaac and Rebecca Procter. His father emigrated from York, England, in the year 1793, and arrived in the ship William Penn in the Delaware River in September, while the yellow fever was raging in Philadelphia, and as a consequence the passengers were not allowed to come up to the city, but were landed at Gloucester on the Jersey side some miles below. From thence he made his way to New York, where he remained for a time, and then went to Baltimore, afterwards he commenced business in this city. William was born on the 3d of May, 1817, and when but a little more than three years old his father died, leaving, when his affairs were settled, but a small estate for the support of his widow and her family. This prevented William from enjoying the liberal education one of his abilities and tastes was so well fitted to receive, but the deprivation only furnishes us with another proof of the superiority of his mental constitution in overcoming the disadvantages and reaching the high position in scientific culture he attained so early in life, and he should be justly pointed to as an instance of what other pharmaceutic students may attain to if they will but pursue the proper course with the same industry. It would be superfluous to cite the different works upon which his reputation rests ; the whole series of the American Journal of Pharmacy for nearly thirty consecutive years, and the various volumes of the Proceedings of this Association, attest his industry and the painstaking care with which he worked. He was Corresponding Secretary of this Association for four years, 1852 to 1857, and first Vice-President in 1859 and 1860, and President in 1862. While we thus record our high esteem of his scientific character, we would not do justice to his memory did we fail to mention the exalted moral worth and sterling integrity which characterized his every action. Well may his bereaved family, in dwelling fondly over his memory, feel that they have lost one who has rarely been more justly esteemed in life, and whose death left a greater void in the hearts of those with whom he was accustomed to associate.

CHARLES ELLIS, for many years a leading druggist of Philadelphia, successively Secretary and President of Philadelphia College of Pharmacy, died at his residence in Philadelphia in the 74th year of his age. He was President of our Association in 1857 and 1858. His influence was always in favor of advancement of our profession. His labors in the Philadelphia College of Pharmacy were testified to by the members on his retiring from the presidency in 1869, and his death was regretted by his many friends.

HENRY K. BOWMAN, of Philadelphia, died December, 1873. He was regularly educated to the drug business, and was for some time employed by Messrs. Powers & Weightman, by whom he was much esteemed for his attention and energy. His death resulted from consumption hastened by previous sickness.

JAMES S. ASPINWALL, of New York, became a member of our Association in 1855, and was for many years one of the most prominent druggists of New York City.

Fred. A. Keffer, of New Orleans, died in 1873. He was regularly educated to the business, and graduated high in his class at the Philadelphia College of Pharmacy. He was elected a member in 1863, and was distinguished for his energy in business matters. He was associated with the house of E. J. Hart & Co., of New Orleans.

Darius B. Kidder, of Boston, Mass., died in June, 1874. He became connected with our Association in 1868.

The committee would, in conclusion, express their thanks to the various officers and members with whom their official relations have brought them in contact for the uniform courtesy and promptness in their respective duties.

Thomas S. Weigand,
Chairman Executive Committee.

REPORT OF THE PERMANENT SECRETARY.

To the Chairman of the Executive Committee:

During the ten years that it has been the duty of the Secretary to publish and distribute the Proceedings, the volume has steadily increased in size, so that of late years it had exactly doubled the number of pages contained in the volume for 1864, while the time of distribution has remained unchanged, varying merely between the four weeks from the middle of February to the middle of March; and in an exceptional case, the causes of which were explained in the preface to the volume for 1873, the Proceedings did not reach the members until the latter half of the month of April in 1874. It will be noticed from this that the publication of the Proceedings has lately been accomplished in what is equivalent to one-half the time of ten years ago; but it still appears desirable to shorten it even more if possible, because at present there is a delay of over six months from the time at which essays are presented at our annual meetings to the period they become available to the profession at large. It was for this reason that in the Secretary's report to the meeting at Richmond a proposition was made to permit the publication of scientific papers and essays by the pharmaceutical journals in advance of the Proceedings. It is true that much may be said in favor of both sides of this question; but the Association having refused, by a two-thirds vote, to grant this permission, the desirability of an earlier issue of the Proceedings becomes, by this action, more important, and it is the opinion of the Secretary that the time may be shortened by arranging the matter somewhat differently from what it has been customary heretofore; and he intends to attempt such a change in the publication of the Proceedings of the present meeting, and desires that after having received the volume, the members may subject any innovation to a free and friendly criticism.

As directed by the Association last year the Report on Elixirs was sent out to all medical and pharmaceutical societies in the United States and Canada, whose addresses could be ascertained. In this labor great assistance was rendered to your Secretary by Dr. William B. Atkinson, of Philadelphia, Permanent Secretary of the American Medical Association, to whom his sincere thanks are due for the cordiality with which that gentleman furthered this particular object of our Association. The report thus distributed was intended for the use of the associations only to which it had been sent, but before they could have acted upon it, it appeared in full in one periodical, and it was then deemed best to send it also to all medical and pharmaceutical journals in the country, by a number of which it was afterwards published. It thus happened that this report became public property before many members of our Association had it in their possession, and complaints were made by several members of this seeming injustice. It was a practical illustration of the effect which an advance publication of papers would be likely to produce, though in this instance it occurred without the knowledge and consent of any officer of the Association.

Only few answers have been received from the societies addressed on the subject of elixirs, but from information privately obtained it is believed that the action of our Association has been received with almost universal favor, although it must be admitted that many physicians continue to use or prescribe the same semi-proprietary articles as heretofore.

The Fourth International Pharmaceutical Congress has been held this year, during the month of August, in the city of St. Petersburg, Russia. The Association having failed at its last meeting to take measures, or make any provision for the representation of our Association at this Congress, as suggested in the annual address of President Ebert, the officers sent the following communication to St Petersburg, in conformity with the resolution adopted in 1871, at the meeting held in St. Louis:

OFFICE OF THE PERMANENT SECRETARY AMERICAN PHARMACEUTICAL ASSOCIATION,
145 NORTH TENTH STREET,
PHILADELPHIA, PA., July 13th, 1874.

TO THE FOURTH INTERNATIONAL PHARMACEUTICAL CONGRESS,
MEETING AT ST. PETERSBURG, RUSSIA:

At the nineteenth annual meeting of the American Pharmaceutical Association, which was held in the city of St. Louis, Mo., in September, 1871, a committee appointed the year previous made a report, which was adopted by a very large majority, and in which the following occurs:

"It is therefore recommended that the International Congress be solicited to postpone the meeting which would occur in its regular order in 1875, and that this Association extend a cordial invitation to that body to meet in this country in the year 1876.

"But if for any reason the Congress shall deem it not advisable to accept such invitation, it is recommended that an invitation be extended to the delegates present at the meeting in 1872, and to the pharmacists of all nations, to meet with this Association in 1876."

In the year 1876 occurs the one hundredth anniversary of the independence of the United States of America. This historical event will be celebrated throughout our country, and an international industrial exposition will be held, in commemoration of it, in the city of Philadelphia, Pa. The government of the United States has extended invitations to all other nations to take part in the exposition, and favorable responses from European, American, and Asiatic governments have already been received. The erection of suitable buildings in Philadelphia has been commenced, and other preparations are in progress, leading us to the hope, that as in other industries, the exposition will present many interesting features and novelties relating to pharmacy and its accessory sciences and pursuits.

It is therefore more than probable that the International Industrial Exposition of 1876, in Philadelphia, will be visited by many European pharmacists, and that this occasion will be a fit and convenient opportunity to unite the delegates of the pharmaceutical societies, throughout the civilized world, in council on the questions affecting the present and future status of pharmacy among civilized nations, or having a practical or scientific importance for our profession.

The officers of the American Pharmaceutical Association, in carrying out the resolution of this Association, and for the reasons above referred to, very respectfully and cordially invite the Fourth International Pharmaceutical Congress to appoint the year 1876 and the city of Philadelphia as the time and place of meeting of the Fifth Congress.

We take occasion to express our deep regret at the impossibility of being represented by a delegation at St. Petersburg, in consequence of the postponement of the time of meeting previously agreed upon, and the apparent uncertainty of the date of meeting, when the twenty-first annual meeting of our Association was held last year in Richmond, Va.

Should the Fourth International Pharmaceutical Congress deem it inexpedient to call the Fifth Congress to meet in the United States of America in 1876, we now, by virtue of the above resolution, very sincerely invite all the societies which may be represented at the St. Petersburg Congress, and all pharmacists, to meet the American Pharmaceutical Association at its twenty-fourth annual meeting, which will be held in Philadelphia during the International Industrial Exposition in 1876, and of the precise date of which due and timely information will be given hereafter.

We remain, with fraternal greetings,

JOHN F. HANCOCK, of Baltimore,
President American Pharmaceutical Association.
JOHN M. MAISCH,
Permanent Secretary.

It is scarcely probable that the Pharmaceutical Congress will accept our invitation to meet in Philadelphia in 1876; indeed, it is likely that the fourth may have been the last one held, if we may judge from the arguments advanced in several leading pharmaceutical journals of Europe. However, it is hoped that an official answer will be received before the adjournment of the present meeting. The questions submitted for discussion were the following:

1. How far are assistants personally responsible in the exercise of their professional duties?

2. How may the Committee of Inspection (Revisions Commission) of Pharmacies be most suitably appointed?

3. Is it necessary that the professorship of pharmacy should be occupied by a pharmacist?

4. Is it not time that an International Pharmacopœia be prepared?

Without intending to indicate the probable action of the Pharmaceutical Congress on these queries, it may, perhaps, not be improper to make a few remarks on them in this place.

The personal responsibility of pharmaceutical assistants is by no means as clearly understood, and as uniformly regulated in our country, as its importance not only to the pharmacist but to the public at large would seem to make it desirable, and in some cases where legal proceedings were instituted the rulings of the courts and the verdicts of juries have been conflicting. When it is possible for a so-called assistant, who does not know the difference between the two articles, to sell coarsely ground aconite root in place of finely powdered hiera picra, and to escape all censure from a learned judge and an intelligent jury—a result which we are inclined to think is not likely to happen on the other side of the Atlantic—there would appear to be no responsibility devolving upon the assistant; how far at common law ignorance can be pleaded, in extenuation of a blunder committed, is a question for the courts to decide; but the holding of the position of an assistant seems to us to be equivalent to a pretension of a certain degree of proficiency, excluding the plea of ignorance on all ordinary questions, arising in the accepted sphere. The quality of drugs and preparations, the proper sphere of the apprentice, etc., are likewise points bearing on this question, and on which the views of the Pharmaceutical Congress will undoubtedly be looked for with a great deal of interest.*

The second question, concerning the inspection of pharmacies, is of no practical import to our country, where, we believe, but one crude attempt was made to create such an office for the particular benefit of one individual, which, however, was happily frustrated.†

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* The resolution of the Pharmaceutical Congress declares, in relation to the first query, that

"The assistant (that is, the clerk legally authorized to compound prescriptions) is responsible for all mistakes committed through his fault in the store or laboratory.

"The principal is responsible for the good quality of the crude drugs, all chemical and pharmaceutical preparations, and for the proper management and conduct of the business generally.

"For the apprentice, the principal is accountable, or his deputy charged with the supervision of the apprentice."—EDITOR.

† This question was answered by the Pharmaceutical Congress, by declaring that

"The inspection of pharmacies should be conducted by two sanitary persons qualified by the state, one, upon whom devolves the examination of the medicaments and the business management, being an apothecary, actively engaged in business; and it is desirable that he should be elected by the apothecaries. In case of differences of opinion recourse should be had to a commission having jurisdiction, in which apothecaries actively engaged in business are numerically equal to physicians appointed thereto."—EDITOR.

In regard to the third question, it must be borne in mind that in the European schools the chair of pharmacy imparts scientific instruction on chemistry, and sometimes also on pharmacognosy, to those who have already practically learned the business, after having previously received a liberal education, embracing a knowledge of the fundamental principles of science. For the conditions as they exist in this country the question has already been answered by the appointment of pharmacists, all of whom, we believe, with one exception, are actively engaged in the apothecary business. (After this report had been written, the London Pharmaceutical Journal, of August 22d, was received, according to which the Pharmaceutical Congress has answered this query unanimously, as follows: *It is very desirable that the professorships of pharmacy should be held by pharmaceutists, and it is further desirable that where circumstances will allow, there should be two chairs, one for materia medica and one for pharmaceutical chemistry.* It will be observed that all our colleges of pharmacy have been for years working according to this plan, though in the majority of them the chair of materia medica is not held by pharmacists, but by physicians, and the lectures are frequently mainly on therapeutics instead of on pharmacognosy.)

The subject of an International Pharmacopœia has of late years been repeatedly agitated, and was discussed before the second Pharmaceutical Congress, held in Paris in 1867, at which, among others, the late Professor Procter acted as delegate of our Association. The vote of North America (Great Britain was not represented) was then the only one cast in opposition to a Universal Pharmacopœia, "for the reason that the broad differences of views in regard to many important Galenical preparations in use in America as well as in England, together with the very numerous preparations and substances used on the Continent, and not esteemed by us as meritorious, were obstacles too great to permit us to believe that such a fusion of codes could receive the favorable vote of the pharmaceutical bodies of the United States" (see Proceedings of the American Pharmaceutical Association, 1867, p. 315). The arguments are strong, and in our opinion convincing as to the impracticability of a Universal Pharmacopœia, and we doubt not they would be strengthened if the voices of competent judges from South America, Mexico, India, and Australia could be obtained on this subject. It is different, however, with the present proposition of an *International* Pharmacopœia, if we may be permitted to interpret its meaning as analogous to what has long since been accomplished by the three Scandinavian countries, Denmark, Norway, and Sweden (see American Journal of Pharmacy, 1872, p. 237), and which is not only a feasible plan, but an object very desirable and almost of pressing necessity in these times of rapid intercourse between the civilized nations of our globe. Should the fourth question, as may be expected, be answered by the Pharmaceutical Congress in the affirmative,* then it would seem to be of

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* The following are the resolutions adopted by the International Pharmaceutical Congress in answer to Query 4:

(1.) The International Pharmaceutical Congress believes that the time has arrived to prepare an International Pharmacopœia.

(2.) The Fourth International Pharmaceutical Congress expresses thanks to the

the utmost importance for our Association to take an active part in the consummation of so desirable an object, which means nothing less than that any name of a preparation should indicate a uniform strength throughout the entire civilized world; or, in other words, it would be the extension of the idea, as recently advanced by Prof. Charles Hermon Thomas, of Philadelphia (see American Journal of Pharmacy, 1874, p. 317), of a United States and British International Pharmacopœia, and as successfully carried out by the Scandinavian countries since 1865, so as to embrace all civilized countries.

In carrying out such a project, it must be obvious to the careful observer, that its accomplishment can rest only upon the basis of weight and upon a decimal system of proportions, no matter how much may be said in favor of the binary or octonary system of enumeration. Most of the modern pharmacopœias direct their preparations to be made in parts by weight, the proportions being almost invariably in decimals, or without trouble convertible into decimals. The last national convention for revising the United States Pharmacopœia made a step towards this system by directing

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Pharmaceutical Society of Paris for its attempt at preparing an International Pharmacopœia.

(3.) The International Pharmaceutical Congress appoints a committee, charged with examining the French elaboration, or eventually to draft a new Pharmacopœia. The central seat of the committee shall be in St. Petersburg. The work of the committee shall be sent to St. Petersburg not later than December 1st, old style. The draft of the committee shall be sent for examination (Begutachtung) to all larger pharmaceutical societies. The expenses of multiplication (printing or copying) is borne by the pharmaceutical societies interested.

(4.) The draft of an International Pharmacopœia, as prepared by the committee, and approved by the larger pharmaceutical societies, shall be presented by the Pharmaceutical Society of St. Petersburg to the high imperial Russian government, to be communicated to the governments of the different states through the diplomatic way. The governments should appoint a commission (enquête) for the purpose of approving the elaboration, or eventually to assist in the final valid preparation of an International Pharmacopœia.

(5.) The International Pharmacopœia does not exclude National Pharmacopœias, but it is extremely desirable that, in preparing the latter, the principles and general fundamental features of the former be adopted.

(6.) Without forestalling the labors of the committee, the Fourth International Pharmaceutical Congress expresses the desire that the following points shall be considered in the International Pharmacopœia:

a. The language of the Pharmacopœia shall be the Latin, as determined at the Congresses of Paris and Vienna.

b. The metrical system of weights shall be used as the basis in making the preparations.

c. The nomenclature shall be, if possible, uniformly carried out according to a previously adopted principle.

d. Of ordinary drugs, the names only shall be given.

e. Of drastic drugs, the admissible minimum of the active principle shall be given.

f. In Galenical preparations, tinctures, extracts, etc., uniformity in their preparation shall be endeavored.

g. In chemical preparations, the admissible maximum of the impurities shall be accurately stated.—Editor.

"That measures of capacity be abandoned in the Pharmacopœia, and that the quantities in all formulas be expressed both in weights and in parts by weight."

This direction was unfortunately not carried out by the Committee of Revision, and the omission will prove a serious but not insurmountable impediment towards harmonizing the *plan* of our Pharmacopœia with that of most other nations. Those who have had any experience in the making of pharmaceutical preparations by weights only, to the entire exclusion of measures, will readily see the advantages of such a system, while every intelligent pharmacist who has not had this experience, will doubtless, after a short practice, be convinced of its greater convenience, utility, and exactness. As it would be premature at this time, when the precise action of the Pharmaceutical Congress is not known, to make any definite proposition, favoring the measures which may have been taken by the Congress in connection with the subject contained in the fourth query, it appears nevertheless desirable that the officers of the Association be empowered to enter into correspondence with any international body, that may have been created for the purpose of attempting a unification of the plans upon which the Pharmacopœias of the different nations have been made.

In this as in other questions of vital importance to pharmacy, one of our members, who will never again meet us at our annual gatherings, the late Prof. Procter, had taken an active part; he now rests from his earthly labors, having followed to his last resting-place so many who, during the twenty-two years of its existence, have been connected with our Association. For a long period the General German Apothecaries' Society, Section North Germany, has honored their departed members, by dedicating the organ of the Society, the "Archiv der Pharmacie," for one year to the memory of a prominent member, recently deceased, and the title-pages of the former volumes of this publication are, therefore, inscribed with the names of Dulk, Herberger, Walz, Bley, Mitscherlich, Gmelin, H. Rose, and others of like influence upon pharmacy and the allied sciences. It is a similar act of reverence to the deceased members of our Association, that their names are kept in grateful remembrance by publishing them annually in our Proceedings; but it appears to the Secretary as if the majority of the living members would be glad to perpetuate the memory of the more prominent dead, by preserving their features with a volume of the Proceedings. Aside from the deceased honorary members, we have lost four Presidents, Meakim, Parrish, Ellis, and Procter, and men like Carney, Massot, and others, who have done good and faithful service during their lifetime. The Secretary would, for these reasons, make the proposition that the Executive Committee, after having obtained the approval of the President and Treasurer of the Association, be authorized to publish with the Proceedings annually the likeness of one of our departed members.

During the past year the sets of Proceedings in several State libraries were, at the request of the librarian, completed as far as possible, and complete sets were furnished to the Virginia State Medical Society, and several pharmaceutical associations recently established, upon receiving their notification of the foundation of a library. Thereby and by the sale of a few back volumes, as well as by supplying a number of members who were not previously entitled to the Proceedings, the stock on hand in the Philadelphia College of Pharmacy has been reduced as follows:

1851,	327 in paper covers.		
1852,	105 " "		
1853,	105 " "		
1855,	118 " "		
1857,	230 " "	22 bound.	
1858,	64 " "		152 loose.
1859,	—	43 "	
1860,	—	213 "	
1862,	—	286 "	
1863,	—	265 "	
1864,	188 " "	115 "	
1865,	155 " "	30 "	
1866,	73 " "	78 "	
1867,	152 " "	95 "	
1868,	63 " "	145 "	
1869,	105 " "	147 "	
1870,	114 " "	74 "	
1871,	89 " "	68 "	
1872,	100 " "	13 "	
1873,	27 " "	116 "	

The insurance on this property has been continued in the German Fire Insurance Company of Philadelphia in the sum of $2500 at an annual premium of $17.50.

The expenses of the Secretary, exclusive of travelling expenses, have been as follows:

Telegram,	$0 75
Porterage and Freight,	133 10
Packing Boxes, Packing Papers, etc.,	27 61
Postage Stamps,	153 00
Tin Sign for the Meetings,	3 00
Printing of Circulars,	17 50
Journals for Reporter on Progress of Pharmacy, not otherwise accounted for,	21 81
Fire Insurance,	17 50
Total,	$374 27

As usual the largest portion of the expense has been incurred in distributing the published Proceedings. The new postage law will hereafter make a considerable reduction of that portion, since the postage on bound books has been reduced to one-half of the former rates.

All of which is respectfully submitted.

JOHN M. MAISCH,
Permanent Secretary.

A motion was made that the first session be adjourned until to-morrow morning at nine o'clock, when it shall close with the reading of the President's address. This was opposed on account of the illegality of such a course, and because of the delay occasioned, and was then withdrawn, when the President read his annual address.

GENTLEMEN: The honor of delivering the twenty-second annual address before this Association devolves upon me, and in arising to discharge that duty, I feel embarrassed in finding myself so conspicuously placed in the presence of those who are more competent to engage with the topics appropriate to an occasion like the present. An eminent author has pictured the striking contrast between the wise and the foolish man. He represents the wise man as estimating the cost of every proffered honor or comfort which otherwise by accepting, might impose upon him duties for which he was not qualified to honorably discharge; on the other hand, the foolish man, attracted by the dazzling beauty of a passing cloud upon which he may repose, takes his flight without first considering the means of a safe return.

My official position also permits me to appreciate the wisdom of a law that was strictly enforced in ancient Egypt, when that nation was in the prime and glory of its existence. The law to which I refer compelled every man to have a specific trade or profession, and those who dedicated their lives to a special pursuit were not permitted to engage in others, for fear that they would neglect their chosen duties, in the attempt to perform those for which they had not been prepared by education and experience.

The disposition in this age to engage in special pursuits indicates the necessity and wisdom of such a law in the midst of an advancing civilization. But every proposition has its shades of meaning, every vocation its latitude of action, therefore the only apology I offer for accepting the honor extended to me at the last Annual Meeting of this Association, is, that my zeal in the cause of pharmaceutical progress would not permit me to withhold any assistance that I might be called upon to render, in connection with the noble and humanitarian objects of this Association. The Greek who, cured of a dangerous malady, never felt a greater satisfaction in writing his experience, and a description of the remedy by which he had been cured, on the tablet in the Æsculapian temple, that those who repaired thither for relief might be benefited by his knowledge, than I do in contributing my aid towards the enfranchisement of pharmacy, and in assisting to give it that exaltation in the special branches of the medical profession, which it so much deserves, and which is already enjoyed by the other special branches of the medical science.

An amendment to the by-laws adopted at the last annual meeting, strangely metamorphosed the President from a man of business to that of a scientist, and I find myself the first to occupy the advanced position. In this I have no choice, except to obey your commands.

In receiving my commission, with the implements of observation at my command, I repaired to the pharmaceutical watch-tower as an observer of passing events. Occupying my position alone, and being mortal, seasons of drowsiness came over me at times, and while paying my devotion to morphia or riding in the chariot of Morpheus, I may have failed to record some facts that have been noted at other observatories.

Since so much has been chronicled of pharmaceutical interest during the past year, that it would be impossible for me to notice everything in my address to-day, therefore I shall content myself to dwell upon the subjects which I deem of most importance. With the intellectual telescope I have observed the movements of pharmaceutical stars, erratic comets, and falling meteors. With the mental microscope I have marked the relative characters of the objects noticed. With the spectroscope of comparison I have analyzed the shades of color in the aggregation of facts, and with the horologe of time, I have peered through the dim vista of past ages, recognizing in the haze of time the ancient landmarks of physic, around which all of primitive learning rests. The gods of human creation are still the recipients of superstitious faith, and continue to be worshipped with more or less devotion. You have observed the reappearance of Chiron the Centaur, the instructor of the God of Physic (Æsculapius), who is to-day the representative of a nostrum to be found in almost every drug store. Mercury still shows his bright and shining face in the modern heaven. Æsculapius still rests upon his staff, around which the sagacious serpent perpetually entwines, and his daughter Hygeia is still pleading with humanity in the cause of health.

Very little is known of the exact history of primitive medicine. The God of Physic is enveloped in a mythological cloud; after him very little is known for about seven hundred years, at which time the great Hippocrates, who claimed to be a lineal descendant of the god on his father's side, and of Hercules on his mother's side, came upon the stage of human action, and introduced a new epoch in the healing art. He was eminent both as a physician and pharmacist, and in the materia medica which he established, were included the names of many drugs that are the most prominent in the materia medica of to-day. This great man died in the 99th year of his age, 361 B. C.

I will mention another link in the chain of physic, viz., Galen, of immortal memory, who was renowned as a physician and pharmacist, and pretended to be a disciple of Hippocrates, though no two men were ever more dissimilar. He died in the 90th year of his age, 193 A.D. After him we find many names more or less celebrated in the healing art, including the quack Paracelsus, who, we are told, was the first professor of chemistry. By the introduction of his chemical medicines, about the year 1520, he endeavored to radically overthrow the principles and practice of Galen.

The literature of ancient physic is deeply interesting, but were it not for the occasional reference to the ancient apothecary in sacred and profane history, nothing would be known of him. We may rest assured that if pharmaceutical organizations ever existed in olden times, they were of a very subordinate character.

In order to observe the condition of pharmacy during the middle ages, I will refer to the school of Salernum. This was the oldest and most celebrated medical school of mediæval times, and in many respects far in advance of its age. When and by whom established is not positively known. It is represented to have been established by Noah's eldest son, Shem, but another account, more likely true, is, that it was the work of Goths, who, migrating through the fallen Roman Empire, colonized on the shores of Southern Italy. In the archives of Naples, names of Salernum physicians are found as far back as 846 A.D.

"Mala Corona, an adept in physical sciences, on visiting that school as the seat of learning in 1056 A.D., states that the brightest intellect in the faculty, and the only one able to combat his views, was the learned matron and professor, Trotula."

This shows that the present age was anticipated in the recognition of the intellectual worth of woman, by the faculty of that college. But history demonstrates that the apothecaries, who were known as *confectioners*, and *druggists* as *stationers*, were oppressed beings.

The school selected St. Matthew for its patron, and for the motto on its seal the words "Civitas Hippocratica," and the degree conferred upon its graduates was M.A. and physician. Its faculty consisted of ten professors or magistri, who succeeded each other according to seniority. Hippocrates, Galen, Aristotle, and Avicenna, were the acknowledged authorities in the branches taught. The candidates for medical honors were required to study for seven years, and to be twenty-one years old before graduating; even then they were not permitted to practice indiscriminately, for to practice surgery, another year's study in anatomy was required. "But every one to whatever degree admitted, must first swear to be true and obedient to the Society of Physicians, to refuse all fees from the poor, to have *no share of gains with apothecaries, and to inform the authorities whenever an apothecary falsified a drug.* A book was then put into his hands, a ring on his finger, his head was crowned with laurel, and he was dismissed with a kiss." The apothecaries and druggists were placed under the supervision of physicians, who were forbidden to merchandise with them as to prices, or to own any share in their profits, and both those who manufactured and those who sold medicines, were first sworn to a strict adherence to the Codex; their number was limited, and the cities or towns in which they could follow their avocations carefully designated. The prices allowed to be charged were based chiefly upon the perishable nature of the articles. Two imperial inspectors were charged, in connection with the medical faculty, with the duty of superintending the preparation of all *electuaries* and syrups, and the sale of *poisons*, *love-philters*, and other charms was strictly regulated by their medical superiors. In history we are also informed, that the apothecaries of Europe during the middle ages were important servants in the kitchens of kings and had charge of the confectionary departments. Possibly their practical training in the confectionary art whilst under the instruction of their taskmasters of Salernum, qualified them for such honorable positions.

I do not doubt the antiquity of the pharmaceutical art, though we have no proof that it formerly existed as a science, or as an organized body for the promotion of trade or educational interests. Hence the conclusion is forced upon me, that pharmaceutical associations and colleges are of modern creation, and as such are comparatively infants in the struggle for an independent and honorable existence. It is true that much good has been accomplished by the influence of these institutions, but the brightest hopes lie in the future.

This Association, not a quarter of a century old, has been growing in strength and usefulness. Its prospects are bright, and our efforts will be crowned with success if the members remain true to each other, perpetuate their devotion to the objects of the Association, and are guided in their councils by good influences. By personal contact the intellect is brightened and sharpened, the moral nature invigorated and strengthened, the professional intercourse rendered honorable, and occupying, as we do, a vast field of unexplored knowledge, its treasures will more readily yield to combined efforts, whilst the association of mind will induce a higher appreciation of scientific and artistic attainments.

There is a great difference between the pharmacist of the nineteenth century and those of all preceding ages. Science, as applied to an intelligent investigation of the physical universe, so far as we know, slept in quiet repose during the six thousand years of the world's written history. Not until the sixteenth century of the present era did the direct rays of scientific truth light the path of human inquiry, and within the last fifty years more has been learned of nature and her laws than was known in all preceding time. But each new fact convinces us all the more of our profound ignorance, and the need of greater and more persistent efforts to dispel the film that obscures the clear sight of the scientific eye.

The four elements of the ancient philosophers have yielded to the investigation of modern chemists sixty-four elementary bodies, and we have reason to believe that some of these are compounds. The man of true science investigates nature in search of truth, which he values as the agent through which his fellow-beings are made useful and happy. By our educational institutions, representing every department of knowledge, learning is made the common property of all, and is no longer the possession of the few to be used as the chain of human slavery and to advance personal ambition to the injury of the masses, unless the latter prefer to remain ignorant. The diffusion of learning is the genesis of human pursuits, and the healing art, which was originally guarded with jealous care as a family secret, and transmitted from father to son with a solemn oath not to divulge its mysteries, has become, under the bright light of a new dispensation, a wide range of scientific thought, calling to its aid a diversity of talent, and affording several special branches, each being sufficient in itself to engage all the time and capacity of a single individual.

Pharmacy is one of these special branches, which, when its votaries understand aright, they will confine their labors more closely to its specific duties. The better acquaintance with the several duties of these branches and the mutual dependence of each will come only through a higher education, the application of which must be general, and the construction of mutual codes of ethical and æsthetical habits. The time has already arrived when the pharmacist is required to be something more than an artisan if he desires to perform his duties intelligently and in accordance with scientific principles, otherwise he is a pretender without the hope of honor, a detriment to the public good, and an obstacle in the way of his more progressive brother.

I trust that the colleges of pharmacy in the United States will always fully realize the extent of their moral obligations, and unite upon some general plan to increase the usefulness and honor of American pharmacy. United as a brotherhood, and in good faith mutually exerting their several influences to promote a higher standard of pharmaceutical education, they will do more than can be accomplished by any other possible means to place pharmacy in the highest ranks of learning. There is no reason why it should be inferior to any of the learned professions, and with the reasonable hope to elevate it above its past and present low estate, pharmacists in all parts of the civilized world have united in their efforts for that purpose. It is pleasant to notice that this laudable enterprise is not less visible in the new than in the old world. But it will require time, patience, and well-directed energy to realize our expectations, but when the object is attained the possession will be worth more than all the labor; then the American Pharmaceutical Association, being the axis around which the pharmaceutic societies and colleges revolve, will be able to exert a pre-eminent influence on the progress of professional and commercial pharmacy, and like the compass to the mariner on the broad expanse of ocean will be its meetings to the active pharmacist, directing him from the driving storm to the haven of peace.

The future of pharmacy is a problem engaging the attention of the more thoughtful minds from different national standpoints. Some of those who have discussed the question have expressed hopeful views on the subject; others are apprehensive, from the fact that with the advance of knowledge there is increasing skepticism in medicine. They believe that in the future physicians will prescribe only simple and palatable remedies, relying mainly upon the recuperating influences of nature under favorable hygienic regulations, and that concentrated medicines, such as fluid extracts, sugar-coated pills, and alkaloidal solutions, being easily carried about their persons, and always ready to administer without much trouble, dispensing pharmacists will be gradually displaced by the withdrawal of patronage, or squeezed out of existence between the pressure of physicians on the one side and the manufacturing pharmacists and chemists on the other. I am not prepared to believe that such a condition will ever be experienced.

There are fashions in physic as well as in other affairs of life, and they are always changing. They may, perhaps, come under the range of periodic laws, forming a class in phenomena analogous to those which are observed in religious, political, and social sciences, and in the cycles of public disasters, such as fires, floods, and family afflictions. But the better understanding of medicines, their isolated principles and therapeutical properties, as well as a more perfect knowledge of the nature and causes of diseases, coupled with the advancements made in the art and science of pharmacy and chemistry, have introduced improvements that mark a striking contrast between the present and a hundred years ago. Now the active principles of drugs, developed by the scientific skill of the pharmacist into concentrated and infinitesimal doses, are fashioned by the hand of art into palatable or tasteless simples and compounds, and are valued medicinally by the morbific classes in accordance with the development of these essential qualities. One hundred years ago almost invariably the crude drugs were administered, devoid of a neat manipulation, and valued according to the degree of their nauseousness and the violence of their action.

Many of the medicines included in the materia medica and pharmacy of the last century, which were prized as efficacious remedies by the most renowned practitioners, were of animal origin; also the excrements of the human body and lower animals. Such remedies would be revolting and obscene at the present day in refined society. Yet in the domestic practice of the ignorant the ancient abominations are held as firmly as though they possessed magical powers.

The old method of giving strong and nauseating doses continues in vogue with many. This calls to mind a ludicrous case which came under my own observation several years ago. A woman called on a pharmacist for a "strong" dose of medicine to make her husband "cascade," explaining that he felt like throwing up. Not understanding her definition of *cascade*, the explanation suggested that an emetic was desired, and accordingly a dose of ipecac was dispensed. Very soon the woman returned, stating that the medicine caused him to "cascade" freely, but that it did not cascade the right way; he wanted to cascade downwards, and accordingly ordered a big dose of "*calmel and jollop.*"

Many years ago, when this great Western country depended on the Eastern markets for merchandise of all kinds, a Western merchant in an Eastern city concluded to take a dose of calomel, and accordingly purchased one ounce of that sovereign remedy, of which he took one teaspoonful and retired. Very soon he was taken ill, and a physician was summoned, who, on examining his patient, recognized symptoms of poisoning. After much inquiry he learned the cause, and was very much astonished to hear from the merchant that one teaspoonful of calomel was his usual dose when at home. The physician repaired to the drug store from which the medicine had been sold, and after explaining the case to the pharmacist, received the following interrogatory: "Why in the devil did he not ask for Western calomel?"

I cannot believe that such nefarious practice would be indulged by any one connected with a pharmaceutical organization. Pharmacists, by establishing a higher educational standard, will gradually displace such evils, especially if analytical chemistry is thoroughly taught, in which event trade articles will be so generally tested, and when not of standard quality exposed, that in time those who are disposed to defraud will become intimidated. At the present time, if medicines and groceries of commerce were carefully tested, a volume of knowledge would be disclosed that would create general alarm. Already some members of this Association, in a limited way, have rendered valuable public service by exposing trade articles. I hope to see pharmacy professionally equal to all of the learned professions. But to accomplish this, judgment, sacrifice and industry are needed, and to build upon a firm foundation is all-important. The only hope for a proper preliminary effort will consist in the selection of good material and its careful cultivation. Pharmaceutical students should not be received except on the basis of an intellectual and moral qualification, and a willingness to engage in the usual mechanical labors pertaining to the business.

Pharmacy, as at present practiced in all parts of the United States, is so thoroughly disorganized in detail that it is perplexing to those who are endeavoring to advance its professional interests. The pharmacist is required to be a merchant and a professional practitioner of his science, and by this subsidy of interests he is frequently found incapacitated to harmonize his several duties. Those who aspire to equal honors in the two phases of their business experience should carefully guard against that rock upon which so many have been wrecked, and which constitutes an impediment to progress. By uniting the two interests on a just and generous platform, and letting them serve as handmaids to each other, in harmonizing diverging interests, very much can be accomplished towards advancing commercial and professional pharmacy.

Among those who have discussed the problems of prospective pharmacy may be mentioned the names of Dr. Theophilus Redwood, of London, and Dr. Frederick Hoffmann, of New York. The views of these gentlemen have recently appeared in the journals, and furnish wholesome food for the digestion of problematists, coming from such able and experienced authors. The pharmacy of the civilized world in this age of easy international communication is rapidly crystallizing into a cosmopolitan concretion, which we hope to see very soon represented by an International Pharmacopœia. The diffusion of education, the uninterrupted communication between nations and governments, the facility of converse through the electric tongue, the increasing disposition to organize national and international conferences and expositions, are harbingers of better times, which gladden the hearts of men and incite them to greater and more noble efforts. Already an International Pharmaceutical Congress has been organized, which opened its fourth annual meeting at St. Petersburg on the 14th of August last. A congratulatory communication was officially sent from this Association to that meeting, and it is hoped that very soon this Association will send delegates to each of its meetings.

There is one important matter that pharmacists should consider in connection with the subject of education. The pharmaceutical schools of Europe require the students to have a knowledge of the classics, especially Latin. The Latin, more than all other languages, is the language of the sciences, and the professional literature of Europe is richly embellished at times with the force and beauty of classical quotations. It has been decided to adopt the Latin as the language of the International Pharmacopœia, which is soon to assume a definite shape. Should that book be placed in the hands of American pharmacists, how many could translate it with exactness? I admit that many of our members are educated men, but that will not suffice. We should strive to make this higher standard generally uniform, which can only be done through the combined influence of the teaching colleges, and the State and National Associations. We cannot afford to delay in the introduction of improvements, and the present is particularly opportune, as the disposition is to confer high-sounding titles on pharmaceutical graduates. Would it not be better for the qualification to precede the title, than the title the qualification? Let us select the proper seed, plant them in fertile soil, and do not pluck the fruit until it is ripe.

Laws to regulate the practice of pharmacy are becoming general, and their merits have been recently discussed by Mr. Charles C. Fredigke, in essays contributed to the pharmaceutical journals, and Prof. John M. Maisch, in an editorial of the American Journal of Pharmacy. This is a new movement on the part of our legislators, emanating from members of our profession, who are endeavoring to elevate the science. They have already had the good effect of increasing the membership of the colleges and associations, and have incited the young aspirants to pharmaceutical honors to qualify themselves in the teaching colleges. In time this movement will do much good by affording increased facilities, and will influence to an eminent degree the uniformity and excellence of instruction in the branches taught.

I would be very glad to learn that the conference of colleges had decided to require a higher standard of preliminary knowledge of students before permitting them to matriculate. I know of very few colleges of good standing that admit students on any other basis than that of an examination, except in the case of some medical schools, in which the educational standard has been made very low, in order to get large classes of students. The example is not worthy of imitation, and the sad results are apparent to every observing mind, especially the well-informed pharmacist, who is frequently perplexed, because of the fallacious impressions of some medical men, whose deficient judgment may be traced to the want of a better elementary education before entering college. We cannot expect to make educated pharmacists of those boys who do not understand the principles of arithmetic or of English grammar. Should an ignorant boy be personally ambitious, and embrace every opportunity to acquire knowledge, he may become a ripe scholar, and an honor to any avocation he may adopt, but such cases are rare. We may not hope to elevate our profession to a very great extent until the first steps have been well taken. Young men ordinarily are not competent to judge of their own abilities, and for obvious reasons the preceptors in the stores should not decide on the fitness of students to enter college. Unfortunately, it cannot be expected of any one college to take the advance step alone; if at all taken, it must be by the combined efforts of the colleges, and they have nothing to lose by a mutual agreement of the kind.

This subject belongs more directly to the colleges, but as this Association is intimately blended with their interests, and expects its support and honor to emanate very largely from these institutions, I hope that my remarks will not be misunderstood.

In our aim to establish a uniformly high standard, we should not confine our efforts to a close corporation, but work upon broad and liberal principles, recognizing and respecting the rights and interests of others; by such means we can overcome a cowardly subordination to other professions, and compel their confidence and respect. You have doubtless noticed the accounts of an effort on the part of the medical profession in France to subordinate pharmacy to medicine in the French army, and with what alacrity the educated pharmaciens of that nation came to the rescue, and being able to defend themselves were successful, and pharmacy continues to hold its independent position in the army. The pharmacists in our army and navy are known as hospital stewards.

On the continent of Europe the profession has long enjoyed an honorable distinction, and in Great Britain strenuous efforts are being made to elevate it by requiring a higher preliminary qualification. They will succeed, for they have men of acknowledged ability who are earnestly at work. We are equally able to achieve great results, and some of our members have worked successfully in the cause of education. Notwithstanding we have lost some of our best laborers, there is left the reasonable hope that those who have come to take their places will be inspired by the good example of their predecessors. The educated physician does not look disparagingly upon the pharmacist as of yore, but is ready to extend the hand of friendship and assistance. The hard feelings frequently indulged towards each other are the results of estrangement rather than a wilful intent to do wrong. The walls of prejudice are breaking down, and we have been pleased to notice the exercise of an intelligent judgment on the part of one university of high standing, by the election to a professorship of one of our members, who is simply a pharmacist, to teach the art and science of pharmacy to medical students; this is highly creditable to the institution in securing the services of one so well qualified to fill the chair. This is a sign of better times, and I hope to see in the near future the pages of medical journals open to pharmacists, as ours have been to physicians, on subjects of mutual interest. Another very important subject, in which the two professions are mutually interested, and in which the public is involved, is the manner of prescribing active medicinal agents, and unusually large doses of medicines. In this a better understanding has always been needed, and as the lists of active medicinal agents are daily increasing, it is high time for this Association to take some action by which to remedy the evil. The British Pharmaceutical Conference, at its meeting last year, adopted the following, copies of which were sent to the medical associations: "That this Conference, having duly considered the proposals for the use of special signs to mark unusual doses on prescriptions, and the great advantage to be derived from them, consider that the bracketed initial letters of the prescriber's signature, written immediately after the unusual dose, is the best suited for the purpose." "This Conference also respectfully urges upon medical men the importance of the prescriber's full name and address being written on all prescriptions, to facilitate communication between prescriber and dispenser." It is expedient that this Association should take a similar action, and have a committee appointed to prepare the subject in a proper form for adoption.

So much of my time has been consumed, that I cannot do more than refer in a very general way to the scientific literature of the past year. In the domain of chemistry very much valuable and interesting work has been accomplished. The chemical properties of light by Draper, the synthetical production of ammonia, and other substances, by electricity and by other means, in the hands of Gladston, Tribe, and others, the process of obtaining alcohol from flint and quartz by Reynolds, are among the most interesting facts. The ammonia process, which is a direct means of obtaining soda from common salt, is of special interest to pharmacists. This new method, which has been described in the American Journal of Pharmacy, has to a great measure superseded that of Leblanc, which was almost the universal method heretofore.

Perhaps no department of chemistry is so interesting to pharmacists as that of the organic. From the fact that several organic constituents of marked medicinal interest have been synthetically produced, our eyes naturally turn to that wide range of chemical research, anxiously awaiting the production from that source of many of the extensively used alkaloids, such as quinia, morphia, strychnia, etc., and it will not be surprising if, before the vexed question of cinchona cultivation in its various interests have been settled, we should receive from manufacturing chemists its most important and expensive alkaloid, quinia, produced by synthesis. It is reasonable to infer that the key which unlocked the first of these chambers of hidden knowledge, will open the way to others of equal interest and importance. In pharmaceutical chemistry hydrocyanic acid is one of the most interesting subjects, according to the accounts of several English pharmacists. Much has been written on the subject, and as the medicine is largely used in this country, were it given to one of the members as a query, good results might follow an examination of the many varieties to be found in the market.

In vegetable materia medica, as in chemistry, the literature of the past year is full and deeply interesting, and detailed accounts have appeared from time to time in the journals, affording information that time will not permit me to mention even in the most cursory manner.

A legend tells us that about two hundred and forty years ago, a wandering tribe of Indians in Peru left one of its members to die of a delirious fever, and in order that he might quench his thirst, which was very great, they placed him on the margin of a river. While thus alone, he drank freely of its water, which was richly imbued with the virtues of a bark that floated upon its surface; very soon all vestiges of fever had disappeared, and as by magic his debilitated frame was invigorated and strengthened.

To the utter amazement of his companions he returned to them in a few days stronger and in better health than they ever knew him. After hearing his simple story, which they regarded with superstitious pleasure, they immediately collected the sick from all friendly tribes, with whom they repaired to the holy stream, as they imagined it to be, and crowded around its banks drinking freely of its waters of life.

In time their attention was attracted to the bark floating in the river, and the more thoughtful supposing that it might possess some virtue, they collected a portion of it, which they used with benefit; they afterwards collected the same bark from the trees overhanging the river, some of which they gave to the wife of a viceroy of Peru, who was suffering with a dangerous fever, in 1640. An infusion of the bark was made as directed by the Indian, and to the surprise of her friends the fever soon broke, and she speedily recovered. In 1643 it was introduced at Rome by the Jesuits, who sold it for its weight in silver, hence the name Jesuit bark. Sturmius in his "Febrifugi Peruviani Vindiciæ," published in 1658, observes "that he saw twenty doses of the powdered bark sold at Brussels for sixty florins, in order to be sent to Paris, and that he would willingly have been a purchaser of some doses even at that price, but the apothecary was unable to supply him." In the space of thirty years afterwards this wonderful remedy had so completely lost its brilliant reputation that several thousand pounds were stored at Piura and Payta, for which no customers could be found, and in 1779 it fell into almost total discredit, because the bark then in use would not cure chills and fevers. It was finally discovered to be adulterated, or, to judge from the present state of knowledge, an inferior species of cinchona from that at first used, which must have been either true calisaya, or red bark, was thrown upon the market without any intention to defraud. Dr. Sydenham speaks of the adulteration of the powdered Peruvian bark in the year 1678, and remarks that formerly he never experienced any trouble in curing intermittent fever by the use of cinchona in two-drachm doses, but that of late the medicine was so rotten and adulterated that it was necessary to increase the dose to one or two and even three ounces in some cases. This *drug*, like many of the discoveries most useful to man, was found by accident, but it always requires a high degree of intelligence to fully comprehend the intricate character of an accidental discovery, and we find this valuable medicine, which was discovered by chance—introduced to public notice upon its real merits—was rendered obsolete through ignorance, but now revived, and in the hands of Howard, De Vrij, Hesse, Broughton, and others, is gradually yielding to the tests of intelligent investigation a volume of useful knowledge, almost as extensive as was the entire range of natural history to the ancients. Should we be discouraged in our tedious and laborious search for truth when such bright rewards are promised as have crowned the successful efforts of those gentlemen, from whom we learn that they have given many years of patient study on a special subject of the cinchona question? May we not hope that other substances, but little understood at present, will yield equally important results when the influence of scientific research is concentrated upon them?

Equally wonderful with the advent of cinchona was heralded chloral hydrate, and many other substances which have found their proper places in Chemistry, Pharmacy, and Materia Medica. That giant king of the Australian forests, whose towering head, in the beautiful array of its rustling foliage, dancing merrily to the approaching breeze, rises more lofty in the air than the spires of those temples in this city dedicated to the worship of the living God, has burst upon the vision of man with a sort of mythological revelation. May we not hope that the woodman's axe, the chemist's reagents, and the physician's experience, will compel the Eucalyptus globulus to reveal its mysteries to man, that he may know its history and the uses of its constituents?

When we look at the vast number of intricate subjects claiming the attention of man, his ignorance of many of them cannot be surprising, and if he seeks for that knowledge which can only be acquired by personal experience, it is not reasonable to expect that one individual will be practically wise in many branches of learning.

The centennial of the discovery of dephlogisticated air, or as it has been termed "oxygen day," was appropriately celebrated by chemists, on the 1st of August last, at Birmingham and Leeds, in Great Britain, and at Northumberland, Pennsylvania. How imposing must have been the unveiling of the marble statue at Birmingham, representing Dr. Joseph Priestley, of immortal memory, discovering oxygen on the 1st of August, 1774, and the chemists of America, assembled at the tomb of the great benefactor, at Northumberland. The history of oxygen and its prominence and importance in nature illustrate very forcibly how much frequently depends upon a single discovery. We are impressed with the belief that were Priestley living to-day he would not find time to divide his attention between theology, chemistry, and politics; either of these branches of learning would be more than sufficient to absorb all of his great intellect. Let us as pharmacists recognize the changes that have been wrought by time, and after having established a thorough foundation not to pause too long in drinking from the fountain of universal knowledge, but endeavor to concentrate our efforts on the problems of our profession, depending upon our daily contact with the world for general information.

But in this life prosperity and adversity, joy and sorrow follow each other in rapid succession.

"The air is full of farewells for the dying,
And mournings for the dead."

In twenty-two years this Association has increased to over eleven hundred members, therefore we cannot hope with any degree of confidence to meet at each succeeding meeting all of those who have devoted their lives to its interests. Already one hundred and thirty names have been transferred from the list of active members to that gloomy record of deceased members, and as a natural consequence that chapter in our history will receive its annual contributions. In looking over this list we recognize the names of many true friends. Like autumn leaves they have fallen in every direction, leaving with us only the golden tints of well-spent lives. Amongst those who have but recently passed from our midst, whose lives were especially devoted to the interests of pharmaceutical education, may be named Edward Parrish and William Procter, Jr., of Philadelphia, and Henry Dean, of England. The last named was an honorary member of this Association, and the memory of his worth as a pharmacist of superior attainments we are proud to honor. A fitting tribute, in language more expressive than I can command, was paid to the memory of Prof. Edward Parrish at our last meeting; at which time his friend and co-laborer, the late Prof. William Procter, Jr., was present, little thinking that ere another year passed away that he, too, would be numbered with the dead. But, like the wise virgin, he kept his lamp always trimmed and burning, and was ever ready for the approach of that messenger who will come sooner or later to lead all behind the curtain which separates the present from the future life. A Baltimorean by birth, and a Philadelphian by adoption, his memory is especially dear to the people of those two cities. But his efforts in the promotion of pharmaceutical education and the diffusion of its literature gave him a worldwide renown. In the organization of this Association he rendered invaluable service, and with one exception (when he was in a foreign land), he rendered valuable assistance at all of its meetings. Instinctively I turn my eyes with a sort of vacant stare to the seats in your midst, as if to recognize his presence; his voice, so familiar, seems to fall upon my ear. But we will never be encouraged by his presence any more. Let us imitate his example, and when the autumn of our lives shall come it may be exclaimed of us—

"O, what a glory does this world put on
For him who, with a fervent heart, goes forth,
Under the bright and glorious sky, and looks
On duties well performed, and days well spent!

> For him the wind, aye, and the yellow leaves
> Shall have a voice, and give him eloquent teachings.
> He shall so hear the solemn hymn, that Death
> Has lifted up for all, that he shall go
> To his long resting-place without a tear."

Gentlemen, the Eleventh Annual Meeting of the British Pharmaceutical Conference, which assembled in London on August 5th, proved to be highly interesting, and I must express my admiration of the liberal arrangement by which the very excellent papers read and discussed have been published in the English pharmaceutical journals. I cannot see the necessity of withholding our proceedings from the journals until they have been published in the annual Proceedings. One remarkable fact in connection with that meeting is the large number of new members, which Dr. Attfield believes to have resulted from the circular invitations which he sent to pharmacists throughout the kingdom. At the first ballot five hundred members were elected. In the United States there are at least twenty thousand pharmacists and druggists, and only a little over one-twentieth of that number are members of this Association. In order that the good influence of this body shall be generally diffused throughout the trade it is highly important to obtain their sympathy and co-operation. By such means we might in time curtail, and to some extent control, the proprietary and patent medicine trade, which is a growing evil in this country and a degradation to pharmacy, greatly retarding its elevation to the dignity of a profession. We should remember that modern science has ushered our profession into a new epoch, demanding greater sacrifice and a higher intelligence.

I have endeavored to discuss subjects of general interest rather than confine myself to a scientific review of current pharmaceutical literature. In this I can scarcely hope to have met with your entire concurrence, but if I have succeeded in causing you to seriously reflect on matters of great moment pertaining to pharmaceutical progress I am satisfied. In retiring from the chair as your presiding officer, to which your suffrage placed me one year ago, I desire to thank you for the kind indulgence that I have received at your hands, and to express my hearty appreciation of the uniform kindness and consideration that you have manifested for my imperfections, and to thank you for the valuable assistance afforded me in the discharge of my duties. I trust that in the future, as in the past, we may always be closely identified with the interests of the American Pharmaceutical Association.

The Business Committee moved that a committee of three be appointed, to whom shall be referred the address of the President and the report of the Permanent Secretary, to consider and report on such portions of the two documents requiring the action of the Association. The motion was carried unanimously.

Mr. Bedford moved the thanks of the Association to the President for his interesting and able address. The question was taken by Mr. Tufts, and the motion was carried by acclamation.

The Association then adjourned to meet on the following morning at 9 o'clock.

Second Session.—Wednesday Morning, September 9th.

President Hancock called the meeting to order, after which the Secretary read the minutes of the first session, which were, on motion, approved.

The Chair appointed the following committee on the President's address and Secretary's report: Messrs. J. Faris Moore, William Neergaard, and A. W. Miller.

The Nominating Committee presented the following report, which was, on motion, accepted.

Your Nominating Committee would respectfully report the following nominations:

For President.

C. Lewis Diehl,	Louisville, Ky.

For Vice-Presidents.

Joseph Roberts,	Baltimore.
William T. Wenzell,	San Francisco.
Augustus R. Bayley,	Cambridgeport, Mass.

Treasurer.

Charles A. Tufts,	Dover, N. H.

Permanent Secretary.

John M. Maisch,	Philadelphia, Pa.

Reporter on Progress of Pharmacy.

C. Lewis Diehl,	Louisville.

Executive Committee.

George W. Kennedy, Chairman,	Pottsville, Pa.
Joseph L. Lemberger,	Lebanon, Pa.
William McIntire,	Philadelphia, Pa.
Charles A. Heinitsh,	Lancaster, Pa.
John M. Maisch, *ex officio*,	Philadelphia, Pa.

Committee on Drug Market.

William Wright, Jr., Chairman,	New York.
John Muth,	Baltimore.
Emil Scheffer,	Louisville.
William F. Horton,	Boston.
John Calvert,	San Francisco.

Committee on Papers and Queries.

William Saunders, Chairman,	London, Ont.
John F. Judge,	Cincinnati.
William S. Thompson,	Washington, D. C.

Business Committee.

E. H. Sargent, Chairman,	Chicago.
T. Roberts Baker,	Richmond, Va.
William H. Egle,	Harrisburg, Pa.

Committee on Unofficinal Formulas.

Richard V. Mattison,	Philadelphia.

Committee on Adulterations and Sophistications.

Adolph W. Miller, Chairman,	Philadelphia.
M. L. M. Peixotto,	New York.
James R. Mercein,	Jersey City.

Committee on Legislation.

John M. Maisch, Chairman,	Philadelphia.
T. L. A. Greve,	Cincinnati.
Gustavus J. Luhn,	Charleston, S. C.
Augustus F. G. Streit,	Belleville, Ill.
S. S. Garrigues,	East Saginaw, Mich.

Committee on Liquor-dealers' License.

F. Hassencamp, Chairman,	Baltimore.
James S. Robinson,	Memphis, Tenn.
W. T. Baldus,	Washington, D. C.
Edward C. Jones,	Philadelphia.
John Colgan,	Louisville, Ky.

Committee on Infringement of Stamp Tax.

Oscar Oldberg, Chairman,	Washington, D. C.
J. Faris Moore,	Baltimore.
Hermann Vogelbach,	Philadelphia.

Committee on Photographic Album.

P. Wendover Bedford, Chairman,	New York.
Joseph S. Kirkbride,	St. Louis.
John A. Milburn,	Washington, D. C.
George H. Schaefer,	Fort Madison, Iowa.
Benjamin Lillard,	Nashville.

Committee on Ebert Prize.

Charles Bullock, Chairman,	Philadelphia.
Wilson H. Pile,	“
John M. Maisch,	“

Permanent Committee on Pharmacopœia.

George F. H. Markoe,	Boston.
P. Wendover Bedford,	New York.
Alfred B. Taylor,	Philadelphia.
J. Faris Moore,	Baltimore.
William S. Thompson,	Washington, D. C.
Albert E. Ebert,	Chicago.
William H. Crawford,	St. Louis.
James C. Wharton,	Nashville.
C. Lewis Diehl,	Louisville.
C. H. Dalrymple,	Morristown, N. J.
Charles A. Tufts,	Dover, N. H.
William Saunders,	London, Ontario.
Paul Balluff (from Soc. of German Apothecaries),	New York.

Charles A. Tufts,
Chairman Nominating Committee.

M. L. M. Peixotto,
Secretary.

A motion made by Mr. Balluff was carried without opposition, that the President be directed to cast an affirmative ballot for all nominees, and Messrs. William S. Thompson and John A. Webb having been appointed tellers, reported the election of the officers and committees for the ensuing year.

Messrs. W. J. M. Gordon and J. Faris Moore were appointed a committee to conduct the President elect to the chair, who, on being introduced to the meeting, said:

Gentlemen of the Association, I thank you for the honor you have conferred upon me in electing me to the presidency of this Association. Time will tell whether you have made a judicious selection. I have, it is true, presided over meetings for the last two years, but the associations over which I have presided heretofore have been local associations, where all faces were familiar to me and to each other. In this Association, while there are many familiar faces, there are many others with which I am scarcely acquainted, and, therefore, I have some hesitancy in accepting this chair. I will, however, do my best to preside over you in a fair and impartial manner, and if at any time I should from lack of experience fail to do exactly what is just and what is right, I hope you will kindly bear with me, and overlook my faults. The business which will come before you, gentlemen, is manifold. I am hardly prepared to present it to you at this time. I again thank you for the honor conferred upon me, and beg that you will excuse me from saying anything further.

MR. BALLUFF.—I move that the thanks of the Association be tendered to the retiring officers.

The motion of Mr. Balluff was carried unanimously.

The Executive Committee reported the application for membership of Freeman Hall Butler, of Lowell, Mass., who was duly elected, Messrs. J. J. Frost and Gust. Ramsperger acting as tellers.

The Committee on Credentials reported the following gentlemen duly accredited delegates to this meeting from the Alumni Association of the Cincinnati College of Pharmacy: Messrs. Louis Schwab, Louis Heister, Max Sierwald, Charles E. Ferris, and Andrew W. Bain. The credentials were, on motion, accepted, and the gentlemen admitted as delegates, and welcomed by the President.

The annual report of the Treasurer was read by that officer, and on motion, together with his books, referred to an auditing committee of three, to be appointed by the Chair.

TO THE OFFICERS AND MEMBERS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

In conformity with the requirements of the constitution, I herewith present a report of the business of this office for the past year. All the bills of which I have any information have been paid, and there is a balance in the treasury of $918.22.*

I regret I cannot report an improvement in the payment of dues during this year from that of previous years. It would give me pleasure if I could report otherwise. Some members pay as soon as the bill is sent to them, others postpone it as long as possible and retain their membership. This action is not confined to those to whom the Treasurer sends the bills direct, but the agents of the Association in our large cities complain of the same, and that they have to call several times on members before they are ready to pay their dues, and some of our agents have declined to act longer, it is such a tax to collect the bills.

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* This sum does not include the Ebert fund, or the amount received for one life membership, which are invested and the interest used only.

Each member can learn about what time his bill will be sent to him, and can be ready with a little effort to pay or remit at once. It would relieve us of much labor if all the members would assist us in this matter.

A large number are liable to be dropped from our rolls before the next volume is issued, and with the approval of the Secretary all these members will be so dealt with hereafter. The Proceedings will not be delivered to any members in arrears, and when such arrearages have been paid, the Secretary will forward the Proceedings on due application.

I would again renew a request I have previously made. When members change their residence they would confer a favor upon the Secretary and Treasurer by informing one or both of them of the same as soon as again permanently located. Attention to this will save labor for us and expense to the Association.

At each annual meeting individuals are elected members who neglect or refuse to become so. This entails labor upon the officers without any benefit to the Association. No person should be proposed for membership unless he is worthy of the honor he solicits, and is ready to contribute his efforts to assist the Association in its great work. The first name of persons wishing membership should be written in full; the reasons for this will be apparent without repeating them at this time.

With sincere thanks to the several agents of the Association for their valuable assistance, and to the members with whom I have had such pleasant intercourse for the past nine years, I respectfully present this report.

CHARLES A. TUFTS,
Treasurer.

Statement of Receipts and Disbursements of the American Pharmaceutical Association for the year ending September 8th, 1874.

RECEIPTS.

1873.		
Sept. 9th.	To balance on hand as per last report, . . .	$1029 47
1874.		
Sept. 8th.	To amount received to date, ...	3874 30
		$4903 77

DISBURSEMENTS.

1873.			
Sept. 18th.	No. 1.	James H. Brown, Expenses,	$60 00
" 19th.	" 2.	John M. Maisch, Expenses,	44 80
" "	" 3.	Telegram to England,	29 85
" "	" 4.	Thomas H. Hasard, Expenses,	12 73
" 25th.	" 5.	C. Lewis Diehl, Report,	250 00
Oct. 1st.	" 6.	Charles A. Tufts, Expenses,	68 98
Dec. 5th.	" 7.	James H. Slade, Phonographic Report,	185 00
1874.			
April 30th.	" 8.	John M. Maisch, Expenses,	299 67
" "	" 9.	Thomas S. Wiegand, Chairman Ex. Com.,	800 00
July 15th.	" 10.	John M. Maisch, Expenses,	500 00
Aug. 8th.	" 11.	Thomas S. Wiegand, Chairman Ex. Com.,	200 00
" 11th.	" 12.	" " " "	200 00
" 15th.	" 13.	" " " "	500 00
" 22d.	" 14.	" " " "	368 26
" "	" 15.	Charles A. Tufts, Expenses,	300 00
" 29th.	" 16.	John M. Maisch, "	65 60
Sept. 1st.	" 17.	Charles A. Tufts, "	36 68
" "	" 18.	" " "	63 98
			$3985 55
" 8th.		By balance cash on hand to date,	918 22
			$4903 77

E.E. All of which is respectfully submitted.

CHARLES A. TUFTS,
Treasurer.

A communication from the Cincinnati College of Pharmacy was read by the Secretary, giving information that Prof. J. F. Judge had been selected to serve on the Permanent Committee on the Pharmacopœia; his name was, on motion, added to that committee.

The report of the Committee on the Drug Market was next called for.

MR. BEDFORD.—The report of the Committee on the Drug Market is one which is rather lengthy, and can only be read in brief sections—such things as are most interesting. The committee consists of five members, and each of the other members of the committee was requested to furnish a separate report, but only one other has furnished any report whatever.

The report of this committee was read, and, on motion, referred for publication.

The Chair appointed the Committee to audit the Treasurer's accounts as follows: Messrs. Balluff, of New York, Carey, of Louisville, and Sloan, of Indianapolis.

The reception of the following works were announced by the Secretary, as a present to the Association, from Dr. J. M. Woodworth, Supervising Surgeon of the Marine Hospital Service of the United States:

Nomenclature of Diseases, prepared for the use of the officers of the U. S. Marine Hospital Service, and

Annual Report of the Supervising Surgeon of the Marine Hospital Service of the United States, for the fiscal year, 1873.

On motion, the works were accepted with the thanks of the Association.

The report of the Committee on Adulterations and Sophistications was read by the Secretary, and referred for publication. The same course was directed for the report of the Committee on Legislation, read by its Chairman.

The Business Committee stated that no report had been received from the Committee on Liquor-dealers' License of Apothecaries.

Mr. Ebert.—Is it in order to ask why this Committee on Liquor-dealers' License is continued from year to year? Is it simply to fill up, or what is it intended for? If they are not to do any work it would be well to abolish the committee. Professor Moore can possibly give us some information.

The Secretary.—The committee was appointed some two or three years ago, when the Internal Revenue Commissioner decided that apothecaries must take out liquor-dealers' licenses. Many apothecaries previously sold liquor in physicians' prescriptions only, and were under the impression that they were not liable to take out a license. The law was subsequently differently construed by the Internal Revenue Commissioner, and every apothecary was compelled to take out a liquor-dealers' license, and become in reality a liquor dealer before he could be an apothecary. A number of our members objected to that, and thought if that license could be removed, so that apothecaries were not compelled to take out liquor-dealers' licenses, it would be a benefit. I have seen the chairman, Mr. Dalrymple—

Mr. Ebert.—Mr. Moore is chairman.

The Secretary.—Before that, Mr. Dalrymple was, or at least he has been, on the committee. I have seen him repeatedly during the last two years, and from what he told me, I was led to believe that there was no possibility of any such change taking place either by Congress, or that a different ruling would be made by the Internal Revenue Commissioner. The line cannot be distinctly drawn. That is the reason the apothecary has to pay a license. I was astonished this morning when the Committee on Nominations brought in nominations for this committee, which is a special committee, and always has been a special committee; it never was a permanent committee. The same is the case with the Committee on the Infringement of the Stamp Tax. That might perhaps be continued. I do not know that it will do any harm. That is all the information I can give.

MR. EBERT.—The Nominating Committee were not apprised that this was but a special committee, and for that reason filled up the nomination. The nominations have been made by the committee and confirmed by the Association, and I judge it would be necessary to continue it one year longer; but if they are to do no work, and cannot accomplish any results, we had better drop them next year.

MR. SARGENT.—As I understand it, the committee drops in any event.

THE PRESIDENT.—Do I understand Mr. Ebert to make a motion to that effect?

MR. EBERT.—I do not think it necessary. The Chairman of the Business Committee will look after it.

MR. COLCORD.—I should think we had better drop that committee.

MR. EBERT.—We have a good chairman this year.

The Business Committee offered a resolution, inviting Mr. J. M. Duncan, Chairman of the Local Committee of the American Pork Packers' Association, to extend an invitation to that Association, now in session in Louisville, to visit our exhibition-room at any time convenient to them. The motion was adopted.*

It was moved and carried that when we adjourn, we adjourn to meet again at 3 o'clock this afternoon. A motion to adjourn now into the exhibition-room was lost.

The reading of answers to queries being called for, Dr. A. W. Miller read a paper on Extract of Liquorice of American Manufacture (see page 394), and exhibited several samples.

MR. EBERT.—I should like to ask Mr. Miller whether gum is the only ingredient, or rather the only foreign matter which is in this extract of liquorice; whether there is not a certain amount of albumen there. On heating an aqueous solution of liquorice root, a certain quantity of matter is brought to the surface; whether it is dextrin or starch, I cannot say. I was under the impression it was albumen, and as Mr. Miller has given the subject some attention, he will no doubt be able to give us some information.

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* The American Pork Packers' Association accepted this invitation, and on the following day, in a body, paid a visit to the exhibition-room of the American Pharmaceutical Association.

Mr. Miller.—This refers to the albumen which is naturally contained in the root, which I did not investigate. The query is whether there is any gum or dextrin.

Mr. Pile.—I was informed by a manufacturer it contained a good deal of starch, which came out of the root itself, and that was necessary to keep it in shape. Without that starch it would get too soft and lose its form. He told me it was the starch that was in the root only.

The purity of Commercial Sulphate of Potassium is the subject of Query 4, which was answered verbally as follows:

Mr. Bedford.—I have examined some specimens of what is known as commercial sulphate of potassium, otherwise known as slurry, a residue in the manufacture of pearl ash, and those invariably have been found to contain soda. The sulphate of potassium which we buy in crystals is pure, and contains no soda, but the commercial article known as slurry always contains it.

Query 7, in relation to American Nutgalls, was not reported on.

Mr. Maisch.—A portion of that query I believe I can answer. At the last meeting held in Richmond, there were some specimens of American nutgalls exhibited by Dr. Garrigues, which had been collected near Huntington, West Virginia, I think.

Mr. Lillard.—They were collected in Ohio, across the river from Huntington.

Mr. Maisch.—Two students of the Philadelphia College of Pharmacy examined them separately for the amount of tannin contained therein, and they found on the average 23.38 per cent. of tannin in these galls, about one-half or rather less than one-half of good Aleppo galls, but still an appreciable amount of tannin.

The following queries were continued for another year: No. 9, on Medicated Waters, to N. H. Jennings, of Baltimore; No. 10, on the Relation of the Physician and Pharmacist, to E. P. Nichols, of Newark, New Jersey; No. 12, on Bromides, to Charles Bullock, of Philadelphia; and No. 15, on Scammony Resin, to G. F. H. Markoe, of Boston.

Mr. Ramsperger read an essay by Charles Rice, on the Purification of Oleic Acid for preparing Oleate of Mercury (see page 460), in answer to Query 11; it was accepted and referred.

Mr. Remington read a paper by Joseph S. Whall, in answer to Query 13, on the Preparation of Extract of Quassia (see page 379). Several samples of the extract prepared by the different methods were exhibited.

When Query 18 was called up, Mr. Ebert stated that Mr. Fredigke had made a number of experiments, but in the last fire at Chicago had lost all his books and papers, and an answer to the query could, therefore, not be expected from him.

Mr. Kennedy read a paper on the Making of Suppositories, in answer to Query 19 (see page 383).

MR. SAUNDERS.—I would like to say a word or two on suppositories, having been engaged in their manufacture for a year or two past. I find these difficulties are not so great as Mr. Kennedy puts them. In regard to the subsidence of heavy materials, the difficulty is not great where the fat is not heated too much. If it is gradually melted—which can be done by means of a water-bath at a low temperature—well stirred before pouring it into the moulds, and the moulds are set on a lump of ice, the solidification takes place very quickly. I have had little trouble in mixing acetate of lead and other things which you would expect to subside, and the proportions in different suppositories have been uniform so far as any one could judge from the appearance. I think it is a great advantage to make them in moulds. I use the English moulds made of gun metal, and find no trouble in making suppositories containing extract of belladonna and other ingredients that have been spoken of, and have not observed the tendency to get mouldy. Probably it is owing to using too much water. If the right quantity is used, the mixture of the cacao butter is not difficult to be made, and the suppository is very nice.

MR. WELLS.—My experience is the same as Mr. Saunders, in regard to making suppositories by moulds. I have always been successful with it. I take three-fourths of the amount of cacao butter first, and grind it in the mortar, after which I put it into the vessel for heating. Then I take the other one-fourth of cacao butter, and mix it with the medicament I wish to combine with it, and grind it together. Then I heat my cacao butter in the vessel until it is melted, add the medicament with the cacao butter to it, and immediately pour it into the mould placed upon ice. By placing it on ice, it condenses the moisture inside of the mould, which prevents adhesion, and you can have two moulds, and make them continuously by that process without trouble.

MR. MATTISON.—I would like to say a word on this subject. I have noticed their tendency to mould, especially if much water is used. Any extract of hyoscyamus will mould if you use water with it; but without any water whatever, and keeping them, even if not in a damp place, they will eventually mould. In regard to mixing the extract with water, I do not think there is any difficulty at all in rubbing up the extract. Take the extracts and rub them up carefully with water, then to this add the melted cacao butter, stir well in the mortar and transfer to the capsule, heating a very little until the mixture has about the consistency of thick honey; then pour into the moulds, and there is no separation at all. I think you will never fail in making them in this way. I have frequently made ten or twelve gross a day in that way. I never have any difficulty. There is another point which is very important, and that is, taking them out of the moulds. If you have these long gun-metal moulds that hold twelve or fifteen, made by Benton, Myers & Canfield, or Strong & Cobb, after you scrape the excess of cacao butter or medicated material off the surface of the mould with a spatula, put them on ice, or have your moulds cooled beforehand, then take your finger and rub it over the surface of the mould, striking the surface of the suppository which is opposite to the point, thus detaching them from the sides, the suppository will crack a little, and you can have a gross or more come out without breaking one.

Mr. Thompson.—I would like to ask Mr. Saunders whether he has ever examined any suppositories made with acetate of lead or subnitrate of bismuth to ascertain whether the medicated material was equally distributed.

Mr. Saunders.—I have never examined them carefully with that view, but I have been so thoroughly convinced myself in every instance that they did contain the proper proportion from the appearance of them, and the manipulation that preceded the pouring of them into the moulds, I did not think it necessary to do so.

Mr. Wells.—I would like to ask how the gentleman makes his suppositories by hand.

Mr. Kennedy —I take the cacao butter, and powder it in a mortar, first striking the butter gently so as not to produce too much friction, as that would soften the butter, and you could not rub the medicinal ingredients up with it. After I get it into a mass, like pill mass, I roll it out into a roll, cut it into pieces, and shape it into cones with my fingers or a spatula. In summer I sprinkle my hands with lycopodium. I have seen moulded suppositories brought to my store, where the medicinal ingredient was thrown down to the bottom of the suppository. You could see the hyoscyamus where it was all at the bottom of the cone and none at the top at all, showing it was not equally distributed; and if that was the case with hyoscyamus, it would be the case with many other things, that have heavy specific gravities, if made by pharmacists that are not number one.

Mr Judge.—I would like to say my experience has been the same as Mr. Kennedy's. There is no necessity whatever for using moulds; equally good suppositories can be made without them, and you are certain of the uniform distribution of the medicinal matter through the suppositories. Persons acquire very readily a dexterous manner of managing cacao butter; and I do not see the necessity of involving every druggist in the expense of purchasing moulds, when he is more likely to get a satisfactory result without these instruments than with them. My experience is in accordance with the remarks of Mr. Kennedy.

MR. BAYLEY.—I merely wish to indorse the statements of Mr. Kennedy and Mr. Judge, that making suppositories is a mechanical operation, done with the fingers, and it can be done without moulds, I think, better than with them, and an equal distribution of the medicament through the cacao butter obtained. It is a mechanical operation, and every apothecary should be mechanic enough to shape a suppository with his fingers, or with a spatula, in proper form without a mould.

MR. PEIXOTTO.—In my experience with suppositories I have tried all sorts of moulds. I have discarded them all. The best mode is with your fingers. There is no question of that. I have never had any trouble, especially in aqueous extracts, of opium for instance, which are prescribed a great deal in suppositories, and I find, especially in warm weather, when the extract is very soft, it is a difficult matter to mould them. By using the hand, and a little ice occasionally to cool the hand, you can make a good suppository.

MR. RAMSPERGER.—My experience in thirty-one years has been like Mr. Peixotto's and the other gentlemen.

MR. KENNEDY.—I might state that Japan wax, paraffin, spermaceti, and many other things that are used to harden suppositories, you can do without altogether; and not only that, you can make them in one-quarter of the time. I had as lief make a dozen suppositories as a dozen pills.

MR. WELLS —The great difficulty is in using too much heat. I use a low temperature, and with a low temperature there is no trouble.

DR. PILE.—Sometimes people come in for two suppositories and want them immediately. By making them with the fingers you can have them done in a few minutes, while to go through the process of moulding it will take half an hour, or perhaps longer We should be able to make them both ways; if you are in a hurry, use your fingers; if not, you can mould them.

MR. JUDGE.—It is a great object to work with the least possible machinery, provided you can produce the same satisfactory result. Costly apparatus is frequently unnecessary, and the fact that it is used deters students from undertaking experiments, when, if they understood that simple apparatus could be used, they would undertake them. It is so with the manufacture of suppositories. Every druggist does not possess suppository moulds, and if he could make them with his hands, and understands the fact that he can get just as good results with his hands as with expensive moulds, it is for his interest and for the patient's interest that they should be abandoned. The mould question is one which is run in the interest of the manufacturers of moulds rather than in the interest of the practitioners of pharmacy or the patients.

MR. HANCOCK.—I have had considerable experience in the making of suppositories, and I have tried both methods. It is true that with the hand you can make a good suppository, and you can have a uniform distribution of the medicinal agents, but with the mould, if you make them right, you can have just as much uniformity, and you can turn out a much prettier suppository; you have them of uniform size and shape, and in this age of elegant pharmacy, if the pharmacist desires to turn out an excellent result, the moulds are far superior to the ordinary manipulation of the hand. It requires a great deal of experience, however, and I have never seen any one, not even the most dexterous pharmacist, who could make a suppository nicely the first time, or after the first dozen times. It is a matter in which experience comes in about as much as anything I know of. In the case of extracts, or almost any substance, you can, first by incorporating them in the proper consistency with the cacao butter, heating it slightly, letting the temperature be reduced until the mass is too cold to pour into the moulds, having them thoroughly incorporated with the spatula in that condition, then remelting them, and then pouring into the mould, have a suppository that will come out beautifully polished on the surface and perfectly uniform through the mass of the extract, or whatever is in the suppository. My experience confirms the advantage of the suppository mould. You cannot turn them out, not to consider the neatness, with as much dexterity with the hand, and I believe they keep better in the box when the suppository is perfectly contracted by a regular temperature and the use of ice, which cannot be so effectually accomplished by the hand method.

Mr. Kennedy.—In regard to the point that Mr. Hancock speaks of, as to the elegant appearance of the suppository, it seems to me we have too much pharmaceutical elegance practiced at this time, and we should be a great deal better off if there were not so much of it. We want a little more science and not so much machinery.

Mr. Mattison.—Leaving out the question of machinery, which makes an additional expense, and looking at it as a matter of elegant pharmacy, you can turn out more elegant suppositories by the mould. I agree with Mr. Hancock in that respect. There is no trouble in fusing extracts and making them perfectly homogeneous. You can take acetate of lead and calomel and make them into a suppository, and cut it open longitudinally, and find there is no excess deposited in the bottom.

Mr. Ebert.—Chicago will have to be heard on this subject. I have not got anything to say about suppositories, but I hope this discussion will indicate to the Committee on Papers and Queries to bring in a paper occasionally that we all seem to understand. We all seem to know how to make pills and suppositories and good powders, and these discussions are very interesting. Personally, I don't know anything about suppositories, though we have talked over, at the different meetings, the mode of making them. I have seen in the city of Washington a gentleman make suppositories by hand that were as elegant as I ever saw turned out by a mould. Still I have never been able to accomplish the same feat, and for that reason I stick to the mould.

Mr. Remington.—The subject of suppositories I would like to say one word about. I am thoroughly on the mould side of the subject. I have never seen any suppositories made by hand that I would send out of my place. I will grant you can make a suppository which will be uniform, but it does not have the neat appearance that suppositories made by moulds have. It cannot have it; it cannot have that neat appearance, that polish to it, which makes it a pleasant thing to look at; and I tell you, gentlemen, this science of pharmacy must go on, and we must have elegance inscribed on some few of the banners, and whatever some of the members may say about throwing it aside and caring nothing for it, it will not do. You must have your pills, your elixirs, your tinctures, your preparations of a fine appearance. Not that I would sacrifice at all the utility of the preparation in any way, but it is a step backwards, I say, not to consider elegance of appearance. In regard to the other points at issue, so far as utility is concerned, we have the testimony of about an equal number on each side that they can be made in both ways satisfactorily. So far as efficacy is concerned, I never had any difficulty. I never turned out any suppositories when the acetate of lead was in one suppository and none in the rest. It can be done almost as quickly by the mould, and you can make a better suppository.

MR. SARGENT.—In my opinion the members should consider well what Mr. Wells has said. I think his process is the best I have ever found, and it will produce uniform and good results.

MR. MAISCH.—In regard to what Mr. Remington has said about elegance in pharmacy, I do not believe there has been an advocate here at this meeting who would secure elegance at the risk of quality; that was not the idea as I understood it. We all advocate an elegant appearance, and particularly of such preparations as pills, etc., that are made at the shop. I do not care so much whether those made by the manufacturer are of elegant appearance, but those made at the shop ought to be.

MR. COLCORD.—I would like to inquire about the time it takes to make a gross of suppositories by the hand and by the mould, and when I speak of the mould I speak of gun-metal moulds, where it can be chilled very quick. It has been stated here they can be made each way equally as well.

MR. MOORE.—I think they can be made quicker by the hand.

MR. SAUNDERS.—If you use ice, and use two moulds, you can empty one about the time you get the other one filled up. After taking them out it is necessary to wipe the moulds over with a rag to take out the fragments of cacao butter, and by the time you get them wiped out and ready for another batch, and get it poured in and placed on the ice, your first mould will be ready to use.

MR. MATTISON.—When it comes to the question of making them in a large way, there is no question about moulds and hands. There is no trouble about making fifteen gross a day, and changing the material with each gross, while I think there would be a great difference between making that number by hand, and changing the material every day.

MR. HANCOCK.—At our meeting in St. Louis Mr. Brady, from England, showed some suppositories made with gelatin and glycerin; I think generally no attention has been paid to that composition. I have found them exceedingly popular, and introduced them pretty well in my vicinity. They make a nice suppository, and they can be turned out much more rapidly than the cacao butter; but there is one fact I cannot account for. The mass, when it is freshly made, does not prove as satisfactory as when it is made and set aside for some time. I make up a quantity of the composition, and keep it on hand; and when I make suppositories, weigh off the proportion it is necessary to have, and use it with as little heat as possible, and the suppository seems to be of better consistence, and more easily managed.

Mr. Peixotto.—Are these suppositories made of gelatin and glycerin satisfactory to the patient and physician?

Mr. Hancock.—I will state in Baltimore some practitioners are very fond of the gelatin suppositories, and prefer them for many purposes, and especially for vaginal suppositories. They are greatly to be preferred, because the cacao butter is not suitable for that purpose; that has been well testified to by eminent practitioners.

Mr. Saunders.—I should like to ask Mr. Hancock if he has ever found these gelatin pessaries shrink after keeping them awhile.

Mr. Hancock.—That is one of the difficulties with the freshly made mass, which seems to be overcome by keeping the preparation on hand. When you make up this mass, and cut from it, and use it with as little heat as possible, then the size of the suppository is preserved.

Mr. Maisch.—Is there much water used in the making of those suppositories?

Mr. Hancock.—About enough water to prevent the irritating influence of the glycerin. Pure glycerin when used on an abraded surface is irritating; there is enough water added to overcome that difficulty.

Mr. Remington.—How about the relative solubility of those suppositories?

Mr. Hancock.—They are very soluble.

Mr. Remington.—I made some and held them in my hand quite a while, and they did not lose their shape. I have heated them above 98° without the effect of disintegrating them.

Mr. Maisch.—It is the moisture that dissolves them.

Mr. Remington.—Another point which was spoken of in regard to the shrinkage. Do they give up their amount of medicament to the surface as well as the cacao butter suppositories?

Mr Hancock.—They do not; and I know one physician especially who prefers them because of not giving up the medicament so rapidly as the cacao butter does. The gelatin suppository gradually dissolves when it is brought in contact with elevated temperature and a moist surface, but if you hold it in the hand, and have no moisture in the hand, you may elevate the temperature considerably without affecting the suppository.

Mr. Mattison.—I would like to add my voice to corroborate Mr. Hancock's remarks that gelatin suppositories are very nice indeed; much more elegant than those made with cacao butter. In Philadelphia we were unable to get the physicians to prescribe rectal suppositories made in that manner, but for vaginal suppositories they are very superior.

Mr. Hancock.—Mr. Brady recommended Nelson's gelatin. I found it did not answer so well as Cox's, and I am inclined to believe, from what I learned from inquiry, that the gelatin made by Nelson, that which is used in England, is a different article from what is exported to this country. Cox's gelatin is far better than Nelson's that is brought to this country.

MR. MATTISON.—I have always used Cox's, and I think Messrs. Brown and Shinn likewise use Cox's.

The Association then adjourned into the exhibition hall, where, under the guidance of the Committee on Specimens, the members examined the various articles of interest detailed in the committee's report. (See page 322.)

The Association then adjourned.

Third Session.—Wednesday Afternoon, September 9th.

The meeting having been called to order by President Diehl, the minutes of the second session were read and approved.

Mr. Remington read a paper on Hypodermic Solution of Quinia, written by Mr. A. P. Sharp, in answer to Query 16 (see page 377), suggesting a formula for this preparation.

Mr. A. E. Ebert read an answer to Query 5: What is Cincho-quinine? The paper sketches the history of the introduction into medical use of this nostrum, and gives the results of the analyses made by Mr. Wenzell, in 1870, and lately by the author (see page 448).

Query 22, on Rhubarb, was answered by Mr. C. A. Heinitsh, who found that rhubarb, previously exhausted by water, yielded to alcohol principles possessing laxative properties (see page 390).

MR. DIEHL.—This query originated in the fact that a statement was made by Mr. Bille in the American Journal of Pharmacy, in 1872, that the aqueous extract of rhubarb contained all the active properties, and that alcohol afterwards extracted no purgative principles.

MR. MAISCH.—It will be remembered, in Europe the syrup of rhubarb is generally made from the cold infusion of rhubarb, which is found to possess active purgative properties.*

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* The Pharmacopœias of Belgium, 1854, of Bavaria, 1859, and of France, 1837, directed the rhubarb to be exhausted by cold water *only*. The French Codex of 1866 has dismissed syrup of rhubarb.—EDITOR.

MR. EBERT.—The syrup of rhubarb, made according to the German Pharmacopœia, contains an alkali, carbonate of potassium, which is said to dissolve all the active principles of the rhubarb. The same is true in regard to the aqueous tincture of rhubarb.

Mr. Remington read a paper by Mr. R. H. Stabler, on the Active Constituents of Bitter Orange-peel, in answer to Query 23 (see page 391).*

Mr. Lemberger read a paper on Cosmoline, in answer to Query 26 (see page 384), which elicited the following discussion:

MR. SARGENT.—I would like to inquire whether Mr. Lemberger made any experiments with purified paraffin as a substitute for this article?

MR. LEMBERGER.—I did not, for the reason stated. I was very partial to yellow wax.

MR. SARGENT.—As a substitute for cosmoline?

MR. LEMBERGER.—No, sir. Aside from the subject of the query, I will state I found in the exhibition-room a sample of an ointment made with cosmoline substituted for lard. I have no doubt with a little more wax added to that, it will make an equally pleasant preparation to handle.

MR. MAISCH.—It never occurred to me that the wording of the query was so entirely one-sided until I heard Mr. Lemberger's answer read. It simply asks, "Does that preparation possess any merit; or can its claims for merit be established?" That is all. The query, to be a complete one, ought to have included the actual composition of the article. It is my opinion that it is nothing else except some of the heavier coal oils, a portion of that class of bodies that are termed paraffins. What is in chemistry called paraffins is a series of bodies of homologous composition, but varying exceedingly in the fusing and boiling points.† There are as yet no chemical means known for

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* It is stated in this essay, on page 393, that "when an alkaline solution of hesperidin is boiled with an excess of hydrochloric or sulphuric acid, a deep orange-red *resin* is deposited which is *soluble in water* and *insoluble in alcohol*." This statement is copied from Gmelin's Chemistry, Cav. edit., xvii, p. 547, and is found in the original German edition, 1866, vol. vii, p. 1938. The paper by Jonas, to whom this statement is referred, was originally published in Archiv der Pharmacie, vol. xxvii, p. 186, which is not accessible to us, and the brief reference in Buchner's Repertorium, vol. lxxx, p. 136, is not sufficient to determine whether the above quotation should not read, *insoluble in water* and *soluble in alcohol*.—EDITOR.

† "Paraffin is not a chemical body, but a mixture of several solid hydrocarbons, homologous with marsh gas, which up to the present have not been separated." Wœhler's Organic Chemistry, by Fittig, translated by Ira Remsen, 1873, p. 32.

"Series on the Type C_nH_{2n+2}. The members of this series are called paraffins. . . . The series is a long one, commencing with methan or marsh gas, CH_4, and increasing in complexity by a regular addition of CH_2. The lower members are:

"Methan, CH_4; ethan, C_2H_6; propan, C_3H_8; quartan, C_4H_{10}, all of which are gaseous separating them from each other, and it is very probable they are converted one into the other, simply by a higher or lower degree of heat. It occurs to me that the subject has been treated in an entirely different but very proper manner by Dr. Miller, in his papers read before the Philadelphia College of Pharmacy, to which Mr. Lemberger has referred, and though it may be possible that the experiments made by Dr. Miller may not have as yet produced an article possessing all the properties of the article called cosmoline, I believe they are on the right track; and with some further experiments something might be produced exactly representing cosmoline, and then it would be found to be nothing but the heavier coal oils, or rather a portion of those bodies which are chemically called paraffin. I should like to ask Dr. Miller, as he is present, to give us his experience.

Mr. Lemberger.—I appreciate all that Mr. Maisch says on the subject, and when I came to think over the matter of answering this query, I was met at once with that view. But after reading over Dr. Miller's articles, which I think were all right and in good time (for which I thanked the Doctor personally in a letter for the information he gave), I felt by dealing with the thing nakedly, just as the question presents itself, that my motives might be misconstrued, and what I should say in reference to its merits, from having it used, might look very much like helping on an article of which we knew nothing except what we might suspect; that, more than anything else, led me to visit the manufacturers, and they very kindly, as I stated, took me to their works.

Mr. Maisch.—You did not see the manufacture of cosmoline?

Mr. Lemberger.—I did not see the refining of the oil at the wells as they say they do it. The article, as they receive it, is not near the article in appearance that they put out as the cosmoline finished; and if it is actually the article that I suspect it is, I certainly do not see the occasion for the very great pains that they seem to take to inform persons who have any desire to witness the operation. They promise to admit anybody who wishes, from proper motives, to know anything about it; they willingly will show them through the works. Their room for percolation through charcoal is a very interesting place to visit, and the great combination of apparatus they have there was to me very interesting. It is a very hot place, 120° all the time, but it was interesting to me, and while I did not want to ask too many pointed questions, I found them ready and willing to answer any questions I might put to them.

Mr. Miller.—In what state did Mr. Lemberger see the process commenced? What was the crude material?

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at ordinary temperatures. Next we have a series commencing with quintan C_5H_{12} and ending with $C_{15}H_{32}$, which are liquids, boiling at points varying from 90° to 500° F., while in some of the heavier American oils we meet with still more complex paraffins boiling above 600° F." Pharmaceutical and Medical Chemistry, by Dr. John Muter, 1874, p. 682.

It has been deemed advisable to insert the above quotations, for the purpose of explaining the meaning of the chemical term paraffin.—Editor.

Mr. Lemberger.—A mucilaginous mass, much darker than the cosmoline as they furnish it. They are not permitted to refine it within the city limits, and they told me they have to do that at a distance.

Mr. Maisch.—Do they make it themselves, or purchase it?

Mr. Lemberger.—They make it themselves. What they told me is all I can say. They purchase the oil at a well farther off. All the oil as found in the oil wells, is not alike suitable for the preparation of this cosmoline, and after they have made their selection, they then refine it. They have a man there who does it for them under their direction after their special process.

Mr. Miller.—I was sent out to a place on the banks of the Schuylkill, where the parties informed me they sold the same material to Houghton for the purpose of making cosmoline, and that was the material on which I wrote my second paper. I then came to the conclusion that the first paper I wrote was erroneous in making paraffin the base for a substitute for cosmoline; but by washing the heavy lubricating oil—there is no special name for it; cylinder oil, I think they call it—by boiling so as to remove all trace of odorous bodies from it, I believe it is exactly the same as the cosmoline they furnish, particularly if purified by running it through charcoal, although that is not essential. It is free from taste and odor after the steam is passed through it to remove the odorous bodies. I think I was charged $1.15 per gallon for it. The process was very simple; so cosmoline cannot cost more than ten or fifteen cents a pound, I suppose. There is quite a difference between that and forty-five cents.

Mr. Moore.—I have very definite information in regard to the fact that they procure the substance from which they make cosmoline from the refuse at the coal-oil refineries. They get these heavy substances, and they then refine and convert them into what they call cosmoline. There is no question about that, I think. I had it from the firm themselves. They were not able to refine and produce it within the city limits, but they get it principally from the Schuylkill, and they attribute the difference of consistency of it to the difference of temperature in the manufacture of it. Raised to a certain degree, it is more liquid; to another, it becomes solid. They can raise it to a degree where it is perfectly white, and then it becomes so brittle as to be unfit for use.

Mr. Maisch.—That is precisely the way in which paraffin is obtained. The higher the degree of heat, the more solid it becomes, but I believe there is a limit to it, and at a still higher temperature it is converted into liquids again.* From the moment cosmoline was introduced, it was my opinion that it was nothing but ordinary paraffin, not the solid paraffin which we usually find in the market under that name, but that material out of which that paraffin is probably made by the action of heat.

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* Among the more recent investigations on this subject may be mentioned the researches of T. E. Thorpe and J. Young (Chemical News, 1871, xxiii, p. 124). A solid paraffin, boiling at 255° C. = 491° F., may be distilled in open tubes without being altered; but if repeatedly heated to beyond this temperature, and if a pressure of 20 to 25 lbs. is put on the apparatus, the paraffin will almost completely be converted into hydrocarbons which are liquid at ordinary temperature.—Editor.

Mr. Diehl.—That explains the statement they make in regard to not using chemicals in the manufacture. The chemicals are used at the coal-oil refineries, before they get hold of it.

Mr. Miller.—I have every reason to believe the heavy lubricating oil is heated so as to convert it into vapor, and while passing out of the still it is mixed with a jet of steam which takes out the odorous bodies. That process I imitated by boiling the lubricating oil on water. It is lighter than water, and stays on the top, and the steam passing through it, after a few hours purifies it. It is a very simple operation, indeed.

Mr. Bedford.—At the time Dr. Miller's papers appeared, I made some inquiries from a friend of mine in the business, got some of the oil, and made experiments with it, and the information I got through the Downer Kerosene Works was to the same effect, in regard to the purification of it. There is one other little point. When Mr. Lemberger was speaking about the internal use of it—I do not think he used it himself, but some other person used it—it reminded me of what Mr. Coggeshall told me occurred when he was on jury duty in New York. It was in the days of Pierce's hoarhound candy. A man gave him a certificate that he had had a very severe gonorrhœa, and been cured of it by Pierce's hoarhound candy.

Mr. Miller.—I hope you all understand that I withdraw the theory that cosmoline can be imitated by combining neutral oil with paraffin. That does not furnish the cosmoline. You want the best lubricating oil.

Mr. Ebert.—On what claim do they base their patent?

Mr. Miller.—They claim not to have any patent at all. Cheesebrough, the manufacturer of vaselin, claims a patent, and that he would prosecute anybody making or selling cosmoline.

Mr. Ebert.—What prevents any one from making this same substance?

Mr. Miller.—Nothing.

Mr. Maisch.—I suppose it is possible that they have registered their label, and they may prevent any one from naming it cosmoline; that is very likely the case. In regard to its virtues in burns, etc., it is well to state that carbolic acid water or creasote water applied to severe burns, is an excellent remedy and cheaper than cosmoline.

Mr. Miller.—It would not act on the same principle. Cosmoline acts by secreting the skin from the air; it is a very excellent remedy used at the Pennsylvania Hospital.

Mr. Lemberger.—Lest my position might be misunderstood, I want the Association to distinctly understand I have no interest at all, any more than trying to do justice to the question that was presented me for examination. I have volunteered a little item of information I have got from the manufacturer, and it is just so far a departure from the question.

Mr. Remington.—Everybody seems to be giving it a kick, and I suppose I ought to say something. I can indorse pretty much all that Mr. Lemberger has said in regard to the virtues of it. So far as its manufacture is concerned, we may not know all about it; but so far as it itself is concerned, it is a good thing for the purpose for which it has been recommended. I have seen it tried in a great many cases. I do not like to see a thing a secret at all. Still, it is good for some purposes, and I hope the members of the Association will use it, and try to introduce it for ointments. They will find it very desirable in a great many cases, particularly in summer-time. Ointments made from it will not get rancid.

MR. MAISCH.—I did not hear that anybody tried to run it down as regards its medicinal virtues. I hope the members of this Association will not try to introduce this proprietary article cosmoline, but will go on and endeavor to make it by a process similar to or like that Dr. Miller suggested. I think that will be a great deal more to our benefit as an Association, and as individual members.

MR. LEMBERGER —Prof. Maisch's mind and my own run very much in the same channel. I do not like the appearance of empiricism about it, and as long as the entire process of manufacturing it is withheld from the Pharmaceutical Association, of course it has the odor of empiricism. I hope Dr. Miller or anybody else who feels himself qualified to do it properly, will produce an article that can be used, if found sufficiently meritorious, and be made the base for ointments; for I am very well persuaded in my own mind, that with a little further attention we can make a satisfactory base for our ointments. I hope the samples exhibited here will be examined critically.

Mr. L. Dohme read a paper on Dilute Phosphoric Acid, in answer to Query 17 (see page 431). The essay was referred, and Mr. Dohme invited to continue his researches.

MR. DOHME.—Explanatory of the last remarks in my paper, I may state that I made a number of experiments with glacial phosphoric acid, but unfortunately used but one article I had in my possession. I was delighted with my success in getting at definite results, and wrote my paper accordingly. But before I left home, intending to take some specimens with me, I sent for another specimen of glacial phosphoric acid, and repeating the same experiments with a different article, I obtained different results. I obtained another specimen of acid, and again it differed; and when I finally repeated the experiments with some other acid I obtained in Louisville, I found it would require more study before I could give any definite mode of preventing the precipitate in tincture of iron. I did prepare a dilute phosphoric acid from glacial phosphoric acid, which mixed with tincture of iron without giving a deposit. I noticed this difference, however, that when this acid prepared by the second officinal process was mixed with an equal proportion of tincture of chloride of iron, yielding a clear solution, and was afterwards diluted with water, there was a slight turbidity which I did not notice in the first, which I prepared directly from phosphorus.

MR. EBERT.—I should like to ask Mr. Dohme whether he was familiar with a paper published in the *Pharmacist*, I think it was the May number, by Littleton Thompson, in which he refers to the process of Prof. Maisch, using nitric acid to convert metaphosphoric into the tribasic phosphoric acid. He found it required, as Mr. Dohme just informed us, a concentration of the solution of the acid to drive off the nitric acid; that after he concentrated it to a thick syrupy condition, it still contained nitric acid. In making his experiments, it seems he boiled some of the metaphosphoric acid with water, and after having boiled it for ten minutes, he found it had been partially converted into tribasic acid, and by continuing the boiling for about half an hour, without having made any addition of nitric acid, or any other foreign body, he found the metaphosphoric acid had been converted into tribasic acid. He tried this experiment a number of times, with a number of specimens of the glacial phosphoric acid, and in every instance he found all it was necessary to do to convert the glacial phosphoric acid into tribasic acid, was simply to mix it with water and boil it for about half an hour, doing away with the addition of nitric acid.

Mr. Dohme.—I was looking for papers on the subject but did not see this. I found in my experiments that the specimens of tribasic acid prepared from the first specimen of glacial acid was again reduced to some extent at least into pyrophosphoric acid, when it was concentrated sufficiently to reach a temperature of 350°, a slight turbidity being caused by it when mixed with tincture of iron at that point. When heated to 420° it produced a thick gelatinous precipitate on mixing with tincture of iron. This same acid I boiled with water alone without adding nitric acid again, and found I reconverted it into tribasic acid by simply heating it to 300° Fahrenheit; but it only occurred with this one specimen. I repeated this same experiment yesterday in this city, and found although the greater part of the pyrophosphoric acid had been converted into tribasic acid, there was still a considerable quantity left of pyrophosphoric acid; sufficient to produce a precipitate with tincture of iron. That seems to be a more delicate test than any I have tried for the presence of pyrophosphoric in tribasic acid. As I stated, with the other specimen of glacial acid I used, I did not get as satisfactory results, and I wish to search for the cause of it; first by seeing what proportion of pyrophosphoric or metaphosphoric acid was contained in the glacial acid. I think possibly a clue might be obtained by comparing that first, and then again by the difference in heat. I am satisfied myself that the nitric acid will probably be found unnecessary, but I am not positive upon the subject.

Mr. Ebert.—I hope that Mr. Dohme will accept the query again. It certainly would be a very interesting paper for this Association. I brought this up merely to call attention to it. If we can produce out of the glacial the tribasic acid by simply boiling it with water for a certain length of time, it will do away with the great objectionable feature, which is nitric acid.

Mr. Dohme.—I have my first draft of the paper on the subject, in which I proposed a change of the formula, but not finding it to be produced by all the glacial acids in the market, as there is evidently a difference in the character of them, I thought it would not do to make the change unless there was something definite.

Mr. Maisch.—It is now fifteen or sixteen years since I made those experiments in regard to the conversion of metaphosphoric into ordinary phosphoric acid. I searched at that time through the various works on chemistry, and, among others, also the classical paper of Prof. Graham on the phosphoric acids, but I could not find anything definite in regard to the conversion of the acids into each other, except that by standing and by long-continued heating, they are gradually converted into the tribasic. It has been customary in chemical laboratories to convert pyrophosphates into phosphates by boiling with nitric acid for a certain length of time, and that gave me the idea that the metaphosphoric acid might likewise be converted into ordinary phosphoric acid by the same means. Boiling with water alone, to say the least, is a slow process, at least in the ordinary way in which it is usually conducted; that is, using a dilute solution. After I had boiled it for some time with nitric acid I found, by the silver test, that it had been at least partially converted into the ordinary phosphoric acid. Then came the question, how to get rid of the nitric acid, and the best way was to evaporate it down to as thick a syrup as possible, and afterwards dilute it again. At that time it never occurred to me it might be the higher heat in consequence of the presence of nitric and other acids. The reason of a difference in some samples of glacial phosphoric acids will be found in the nature of the crystal; when recently made, glacial phosphoric acid is transparent. It may contain a portion of pyrophosphoric acid, and after it has been kept for a certain length of time, and more or less exposed to the air, it will certainly contain a portion of pyrophosphoric acid, and even ordinary phosphoric acid may be found in it; and I think one or both will always be found in it after the transparent pieces have become superficially white on account of the absorption of water, and the crystallization of acid upon the surface of the glasslike mass.

Mr. Dohme.—In using heat only, after being led accidentally to this fact that heat with water might produce the conversion, I used a concentrated solution, one ounce in two ounces of water; and after it had all been taken up I heated the solution rapidly on a Bunsen burner to 290°. I took the precaution of using a thermometer, and took specimens at every ten degrees advance of temperature. I found at 290° Fahrenheit the specimen mixed with tincture of iron; at 300° it did again, and it still continued to do so up to 340°, when the turbidity again appeared, and it gradually increased until it reached 420°, when a semi-solid precipitate was the result of the mixture with tincture of iron; but the results are different with different acids. The time consumed in heating was very short, I think about fifteen or twenty minutes.

Mr. Ebert.—I should like to ask for information whether the glacial phosphoric acid that is in the market comes from one source, or from numerous sources; whether it is an article of the market that is made by one single firm, as some of these chemicals are, or whether it is the production of a number of manufacturers?

Mr. Remington.—It all comes from Germany.

Mr. Ebert.—Whether it all comes from Merck or from somebody else?

Mr. Remington.—Principally from Merck; all I know of. What comes into the Philadelphia market is from Merck, and recently a good deal has come into the market contaminated with foreign matter. I do not know whether it was Merck's.

Mr. Bedford.—Glacial phosphoric acid is made by several manufacturers.

Mr. Dohme.—I can probably find out by applying to the dealers of whom I obtain the acid who the manufacturers are. At any rate an examination into the chemical composition of it will give some clue to the causes of this difference, treating it by heat.

Mr. Remington.—I have authority for saying that phosphate of sodium exists in glacial phosphoric acid. Mr. Weightman, who handles a good deal, has found it himself.

Mr. Ebert.—I have had considerable experience myself in the conversion of the meta into the dilute acid of the Pharmacopœia. I have been required to use large quantities of it in that way, so that I have purchased the metaphosphoric acid to convert it with nitric acid, but find it one of the most troublesome things to get rid of the latter. I would reduce it down to a syrupy condition, and still there would be nitric acid present. I naturally, to prevent heating it too much, would pour in water again and keep on, and although my acid had been converted into the ordinary acid I still had nitric acid there, and wished to get rid of that. It took me half a day to convert a pound or two of the glacial phosphoric acid. When Mr. Thompson's paper was published I tried the process, and only having one specimen, which was Merck's acid, I at once tested it. I made a pound, which is now at the store; and by simply boiling for about three-quarters of an hour it has been converted into the ordinary acid of the Pharmacopœia.

Mr. Dohme.—Have you tried the tincture of iron or sublimed chloride of iron test?

Mr. Ebert.—I have not.

Mr. Dohme.—The ordinary test I applied to this solution yesterday indicated the presence of tribasic acid, but there was a sufficient quantity of the pyrophosphoric acid left to cause a precipitate in tincture of iron. I think it must be an amount of eight or ten per cent., which could not be discovered by the ordinary test.

Mr. Maisch.—In some parts of the country a mixture of tincture of chloride of iron and dilute phosphoric acid is used considerably. It was in Philadelphia that trouble occurred, perhaps two years ago; at one time it would produce a clear mixture, and at other times produce a precipitate. That started the original inquiry. I soon became convinced that the cause was that some pyro or metaphosphoric acid remained in the dilute acid; by heating it over, evaporating down, and diluting it, and again evaporating down, you can get rid of the former acids.

Mr. Ebert.—I had the same difficulty presented to me in using liquor ferri tersulphatis, and mixing it in equal proportions with dilute phosphoric acid. I have always had this great difficulty in getting rid of the nitric acid. That was my great trouble.

Mr. Dohme.—In case you attempt to apply the tincture of iron test, I might mention when equal quantities of the dilute phosphoric acid and tincture of iron will mix and make a clear mixture, the result is different when the tincture is slowly dropped into the dilute phosphoric acid. Then it gradually precipitates, perhaps pyrophosphate of iron. I noticed that difference in applying the test.

MR. MATTISON —I hope Mr. Dohme will continue his researches on this subject, as it is a matter which is very interesting to all in the profession. It is a subject that has caused more dissatisfaction, I think, among pharmacists in the last two years it has been noticed than anything else. I have made a great many experiments for a preparation of dilute phosphoric acid from the glacial acid, and always found it precipitated tincture of iron if made by the officinal formula. I always used Merck's acid. I have never found any other make. I found on boiling it, by evaporating it to a syrupy consistency, and then boiling it afterwards, adding another portion of nitric acid, and boiling it three or four times, you could get it all changed to phosphoric acid, but it was so much trouble and caused dissatisfaction so generally, that I have abandoned the process, and lately have used the first officinal formula altogether, although what I think we want is a formula for dilute phosphoric acid that a pharmacist can make in his store without any trouble. All these experiments were made before the paper published by Mr. Thompson in the *Pharmacist*.

MR. REMINGTON.—I have had the same experience that Mr. Dohme stated, and the second formula has been a subject of a good deal of interest. I have had many prescriptions to prepare, and recently I have had to make it from the second formula. With the last sample I had I can make an acid that will mix perfectly without any precipitation. I can explain it in no other way than that it is a different sample of acid. I was very much surprised to find I could do it.

Query 28, on the Addition of Glycerin to Extracts, was, on motion, continued to Mr. Oldberg, and Query 32, on Pharmaceutical Preparations of Calabar Bean, to Mr. Kennedy for another year; also Query 34, on the Bitter Principle of Eupatorium Perfoliatum, to Mr. A. Boyd.

Mr. P. Balluff read a paper on Assistant Pharmacists, in answer to Query 29. (See page 353.)

Query 30, on the Salaries of Drug Clerks, was answered by Mr. H. N. Rittenhouse in a paper read by Mr. Remington, containing several statistical tables. (See page 355.)

The Auditing Committee presented the following report, which was accepted, and the Committee discharged:

LOUISVILLE, KY., September 9th, 1874.

TO THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The undersigned, appointed a committee to audit the accounts of the Treasu rer of the Association, have performed that duty, and found said accounts correct in every particular. Your committee was very favorably impressed with the accurate and neat style in which the books of the Treasurer are kept, and are pleased to be able to state that the finances of the Association are so ably and faithfully cared for.

All of which is respectfully submitted.

PAUL BALLUFF,
GEORGE W. SLOAN,
GEORGE H. FARY.

The report of the Committee on the President's address and the Secretary's report was then read, and on motion, received. The resolutions reported by the committee were directed to be taken up *seriatim*, when a motion prevailed to postpone their consideration, making them the first business after opening the Fourth Session.

The following remarks were made on prescription vials:

MR. HANCOCK.—The glass people have distributed a circular in the meeting requesting each member to give his idea of the proper lip for dropping from. It indicates a desire to cater to the public. They are willing to accommodate, so far as possible, the wants of the trade. It is a subject that I think should engage the attention of every pharmacist, and I hope that every gentleman present will give his idea upon this paper. The want of a nice lip on the bottles to drop from is a great annoyance. I think there is a degeneracy from the time when we were boys. I remember the old style bottles were far superior in that respect to those that are generally used now and turned out from the glass establishments.

Query 31, on Statistics of the number of Druggists in the United States, being called up, the following letter was read:

CHARLESTOWN DISTRICT, BOSTON, September 2d, 1874.

At the last meeting of the Association I accepted Query No. 31, "Can statistics be obtained of the number of druggists in the United States, and can they be classified into a few general classes?"

I have made every effort possible to obtain accurate information in regard to the number of druggists in this country, but I am obliged to confess my inability to obtain the desired information. The Bureau of Statistics could give me nothing authentic, and the lists in the hands of the large wholesale houses were imperfect and unreliable. The commercial registers under the head of druggists have men and firms who do more business in hardware, books, groceries, etc., than in the legitimate drug trade. In many of the small towns and villages the drug trade is in the hands of the grocer, drygoods dealer, periodical and news dealer, such parties in many cases scarcely knowing one drug from another and relying on the label, and yet in the various commercial lists they are placed under the head of druggists. But the rapid decrease of these establishments is inevitable, physicians are rapidly abandoning the compounding of their medicines and prescriptions, except in the more sparsely settled portion of the country, and the general public throughout the land are demanding skilful and reliable pharmacists to dispense their medicines.

I have classified the trade into five different classes, which, I think, will embrace every subdivision.

First. Package dealers, who deal only in packages, of which there is comparatively a small number, the field of their operations being in a few of the largest cities.

Second. Jobbers, which includes all the large wholesale houses of the country.

Third. Jobbers and retailers, or wholesale and retail druggists, of which class there are some in all the principal cities.

Fourth. Retailers or pharmacists who confine their attention to the retail trade and the dispensing of medicine, together with a large miscellaneous trade, embracing in some localities tobacco, cigars, confectionery, liquors, and fancy goods of all descriptions. The number of pharmacists in this country whose business is confined solely to the legitimate trade is comparatively so small that they can scarcely be classified as a separate class; soda fountains exist in nearly all of them, from some of which are dispensed a list of drinks as long as the alphabet. It is thought by many that the nefarious custom of selling liquor by the glass at the soda counter is dying out, and to nothing are we so much indebted to the breaking up of this custom, which robs our business of its respectability, as the position taken by the various colleges of pharmacy and the pharmaceutical societies, who have invariably denounced it.

In keeping this large variety of miscellaneous goods in some localities custom demands it, and the old axiom of "self-preservation is the first law of nature" is sufficient excuse, as in those localities, in many instances, other classes of business have infringed on ours, and keep many of our articles for sale, offering them at reduced rates.

Fifth. Botanic druggists. I give them a separate classification by reason of there being many herbs and specialties kept by them which cannot be obtained elsewhere.

This concludes an answer to a query very unsatisfactorily to the writer, the main point remaining unanswered, but he hopes at no distant day, from the tenor of communications obtained from various parties, to give authentically the number of druggists in the United States.

B. F. Stacey.

Mr. Remington read a paper by Mr. J. L. A. Creuse on the Quality of Commercial Iron by Hydrogen, in answer to Query 33 (see p. 435); also one written by Mr. Fr. Hoffmann, on Santonin, as an answer to Query 35.

Mr. Maisch.—It is interesting to me to learn that santonin is occasionally adulterated. I have sometimes seen santonin which did not look as we are accustomed to see it, and on that account it created suspicion. It seems to me occasionally santonin is obtained in different crystalline conditions by crystallizing it from different menstrua, and that may be the cause of the difference in appearance. I have not long ago seen it in very thick, well-developed prisms, obtained perhaps by very slow crystallization. I think if somebody would accept a similar query and state the difference of the appearance of santonin, as obtained from different menstrua, it would be very interesting, and might lead to some useful results. A simple way to test such a suspicious sample I have always found to be to expose it to the light and let it turn yellow. The whole of it turns yellow.

MR. DIEHL.—If I am not mistaken, Mr. Remington investigated some santonin and found some adulterated. I have found it in this market. Some lots that have been purchased by worm lozenge manufacturers contained a considerable quantity of boric acid, fifty per cent. of it being soluble in water.

MR. REMINGTON.—I had information that it was adulterated with coarsely ground mica.

On motion, the Association adjourned until Thursday morning at 9 o'clock.

Fourth Session.—Thursday Morning, September 9th.

The meeting was called to order by President Diehl. The minutes of the third session were approved as read by the Secretary.

The first business being the report of the Committee on the President's address and Secretary's report, it was again read as follows:

The committee to whom was referred the consideration of the President's address and the report of the Permanent Secretary, after due deliberation upon both papers, would respectfully offer the following resolutions:

Resolved, That the thanks of the Association are eminently due and are hereby offered to the retiring President for his able and exhaustive address, covering so wide a field, and embodying, as it does, objects of such vital importance to the pharmaceutical profession at large.

Resolved, That the officers of this Association be empowered to enter into correspondence with any international body that may have been created, for the purpose of attempting a unification of the plan upon which the different Pharmacopœias have been constructed.

Resolved, That the Executive Committee, with the approval of the President and Treasurer, be empowered to publish annually, with the Proceedings, the likeness of one or more of our departed members, and that for the forth-coming volume our much-lamented friend, Prof. William Procter, Jr., be selected.

Resolved, That a committee of three be appointed by the President to report at our next meeting upon the feasibility of the publication of a table of maximum doses, and to devise a plan by means of which physicians can distinctly indicate unusually large doses in their prescriptions.

Resolved, That a committee of three be appointed by the President to report at our next annual meeting upon the suggestion of our late President, in reference to furnishing copies of papers read at our meetings to pharmaceutical journals in advance of their publication in the Proceedings.

Resolved, That the members of this Association are earnestly requested to call the attention of their neighboring pharmacists to the aims and objects of the Association, and use strenuous efforts to induce them to become members.

(Signed) J. FARIS MOORE,
WILLIAM NEERGAARD,
A. W. MILLER.

A resolution of thanks to President J. F. Hancock having been passed at the close of the first session, the first resolution reported by the committee was passed over, and the second resolution, referring to a proposed International Pharmacopœia, placed before the meeting.

MR. MAISCH.—Although I am ready for the question, I think it would be well to make a few remarks upon this subject, inasmuch as it involves the prospect of a complete change of the plan of our Pharmacopœia and of the preparations in our Pharmacopœia. All the chemical and pharmaceutical preparations are, at the present time, made up, giving the various materials that enter into their composition in certain definite weights, and the liquids, with few exceptions, in measure. The change that would be involved after such a resolution has been adopted would go for abolishing measures of capacity. The various European Pharmacopœias of modern times have adopted the plan of giving all materials in parts by weight, so that any amount of a certain preparation can be made by taking any definite weight for the part. It should be remembered that the convention for revising the Pharmacopœia, that met in 1870 in Washington, practically adopted that plan, but the committee to whom was referred the revision of the Pharmacopœia neglected to carry that provision into effect. A unification of Pharmacopœias has been carried out successfully in Norway, Sweden and Denmark, and in Germany, in the latter country by abolishing the Pharmacopœias for the different German states and adopting one national Pharmacopœia. The idea now seems to be that a plan shall be adopted whereby a name for any preparation would mean the same thing in the different countries. I think, so far as I am concerned, it is a very desirable object, and no matter what amount of labor might be involved in carrying that out, I think our Association ought to take part in it, and our country should finally adopt it, as we would have to do ultimately.

Mr. Miller.—As a matter of information, I would like to ask Mr. Maisch what portion of the Committee on the Revision of the Pharmacopœia is responsible for the failure to adopt measures of weight to the exclusion of measures of capacity?

Mr. Maisch.—If you will refer to the preface to the Pharmacopœia you will find it is stated there that the present plan was adopted unanimously at a very large meeting of the Committee of Revision, where not less than ten members were present, the entire committee consisting only of fifteen. So ten members out of the fifteen are responsible for that.

The resolution was adopted unanimously, and the third resolution read, referring to the publication with the Proceedings of portraits of one or more departed members.

Mr. Ebert.—I should like to ask what expense the Executive Committee would be allowed for that purpose; whether the object can be carried out in the highest style of art, or whether it shall be done very cheaply? If we are going to publish a likeness of our departed colleagues, I think it ought to be in the very best style of art, and this Association should not find fault with the cost, that is, if we have the means of doing it. If we have not, I would very much object to its being attempted.

Mr. Maisch.—I would state that the suggestion of the Permanent Secretary is embraced in that resolution. The Executive Committee is to suggest which likeness shall be published, and the President has to approve it, provided the Treasurer has funds. It is dependent upon the suggestion of the Executive Committee and the approval of the President and Treasurer; so if the Treasurer says we have not the funds, it cannot be done.

Mr. Ebert.—Would it not be best to leave this with the Executive Committee and give them power to act?

Mr. Moore.—It leaves it so; it empowers them to publish with the approval of the President and Treasurer.

Mr. Ebert.—I was not aware but that it compelled them to do it.

Mr. Maisch.—No, sir.

Mr. Moore.—The only direction given in this resolution is, if they publish any, Prof. Procter's shall be the first. That, I suppose, was a work of supererogation, but we felt very much like having his, and said so.

The resolution was then adopted, and the fourth resolution called up, referring to a table of maximum doses, and to unusually large doses.

Mr. Moore —The President of the Association called attention to this subject, and urged the necessity, and it was a question the committee felt ought to be settled, but no plan could be properly drawn and brought up at this meeting. They therefore introduced the plan of having a special committee consider the matter, and report it for the next meeting.

The resolution was adopted as read, when the fifth resolution, relating to the publication of papers in advance of the Proceedings, was laid before the Association.

MR. MOORE.—I am opposed to the publication of essays previous to their coming out in our own Proceedings, but as the committee was appointed to bring before the Association the suggestions of the President, we felt we had no right to comment on it in our report. We therefore bring forward this resolution, and it is before the Association for them to do as they please.

THE SECRETARY.—It will be remembered that at the last meeting held in Richmond, I advocated very strongly the publication of papers in advance of the Proceedings. The Association refused, by a vote of two-thirds of the members present, to grant that power to any one. In the meantime I have had a practical illustration of the manner in which such advance publication would work, and stated it in the report of the Permanent Secretary. It was in relation to sending out the formulas for elixirs adopted at the last meeting, and because the members did not receive those before the medical and pharmaceutical societies, several of the members felt very much aggrieved that they became acquainted with the action of the Association through other associations which had no connection with our own. I hesitate at the present time to advocate the publication of papers in advance of the Proceedings, and I would rather prefer that the matter should be considered by a committee. Moreover, I stated in my report, that I intended in consequence of that vote, to hurry the publication of the Proceedings as much as possible; and if that can be published in as short a time as I hope to be able to get them out, it is very likely that the advance publication of papers will not be asked for. That is the reason I do not like to have the matter decided at the present time.

MR. ROBERTS.—The resolution proposes to appoint a committee to report at our next annual meeting; there is no objection to that that I know of.

The resolution was carried without opposition. The last resolution in reference to an increase of membership was then read.

MR. MOORE.—The resolution is brought forward to bring the question before the Association, but if there is any plan that is deemed more feasible or wiser to adopt, it is open to amendment. It has been suggested by some, that a very good plan would be to authorize the Secretary, or some person, to issue a circular to all the pharmacists throughout the United States.

MR. EBERT.—Similar suggestions have been repeatedly made by the retiring Presidents, and at each meeting the members of the Committee on the President's address have been, so to say, coerced by certain members of this Association not to bring it up before the Association. It was said, "Our Association is large enough. It is getting too awkward now, and we don't want any more members than we have now." And the result has been that

that influence has been exerted from year to year until this meeting, when it seems to have more of a liberal aspect.

Mr. Moore.—This committee could not be coerced.

Mr. Ebert.—I really approve of extending to every pharmacist in the land the hand of membership. We do not base our organization so much upon the science, as the wish to bring in among us all those that represent the profession, whether they are up to our standard or not, but we desire to raise them up to our standard by bringing them into association with us. I therefore indorse the resolution, and hope it will pass. I hope we will make some effort. That out of 15,000 or 20,000 pharmacists in this country, we should only have 1000 representatives, I think is not as it should be. I hope we shall make some effort to get a larger membership, and more scattered through the country than we have at the present time.

The resolution was passed.

Mr. Moore.—If there is no other business before the Association, I have a resolution to offer, which may be regarded as an alteration of the By-laws. All who were present at the opening meeting of this Association, saw the great delay that was occasioned during the first portion of the session; occurring during the absence of the Committee on Credentials. We were detained until a late hour when the President commenced the delivery of his address, and the members, being very much worn out with travel, commenced then to go out; and I could not help but feel it was somewhat discourteous to the President. I would offer a resolution, which would be perhaps an amendment to the By-laws.

Resolved, That hereafter the first order of business of the convention, after the appointment of the Committee on Credentials, shall be the reading of the President's address.

The Secretary.—This cannot be entertained in that manner unless it is meant merely as a notification for a proposition to alter the By-laws.

Mr. Moore.—Then I will give it in that way.

The Secretary.—It may come up this afternoon. It has to lay over at least one session. The By-law to be altered is Section 11 of Chapter VIII. In connection with that, I will now give notice of a proposition to alter a By-law in the same chapter, Section 7. As it reads at present it says that the Nominating Committee shall nominate *officers* for the ensuing year. I propose that it be altered to read " to nominate officers and the standing committees."

Both propositions for the alteration of the By-laws were laid over in accordance with the rules.

The Executive Committee reported the application of the following gentlemen for membership: Alexander H. Jones, Philadelphia; J. Wilmer Simpers, Philadelphia; and W. A. Strother, Lynchburg, Va. Messrs. Averill and Hassencamp, having been appointed tellers, reported their unanimous election.

On motion of the Secretary, a committee of three was ordered to be appointed by the Chair to consider and report upon the time and place of the next annual meeting. Messrs. Charles A. Heinitsh, John F. Judge, and William Neergaard were appointed that committee.

The reading of papers was now resumed, and Query 36 being called for was, on motion of Mr. Remington, continued to Mr. Rickey for another year. The same course was directed for Query 37, Mr. Marion having been prevented by protracted illness to finish his experiments. Queries 38, 40, and 47 were likewise continued.

Mr. R. V. Mattison read an essay on Granulated Effervescent Powders, in answer to Query 39 (see page 368).

THE SECRETARY.—I feel not altogether satisfied with this paper, and hope that some of the gentlemen who have listened to the reading will make some remarks upon it. I have been busy and did not hear all, but it seems to me, so far as I have got the meaning of that paper, it advocates the purchase of granular effervescent preparations from manufacturers. Now that is exactly what I do not advocate. I am entirely opposed to such a course, and would rather that the answer to the query had taken another form, giving practical instructions how reliable effervescent powders can be prepared. I think every pharmacist will feel much better satisfied if he can make such articles himself, instead of being compelled to go to somebody else, whether he be in London, New York, Philadelphia, or Chicago, to purchase them from. I know but little about the preparation of these granular salts. If I could throw any light upon the subject I would do it. Perhaps some of the other gentlemen might.

MR. KENNEDY.—That is my opinion, and I would like to ask Mr. Mattison on what grounds he supports his assertion, that granular salts are better than the natural spring water itself.

MR. MATTISON.—Simply because in a great many instances they furnish a large amount of carbonic acid, and make them acceptable to the stomach, and very palatable in that respect. That is the only point in relation to it. In regard to our Secretary's remarks I hold the contrary view, as I have never seen (although acquainted with a good many manufacturers of granular salts) any that were made by a retail pharmacist that were nice-looking at all. I think they differ in that respect very much from elixirs and other pharmaceutical preparations. Of course that is only my view of it.

MR. MAISCH.—According to that argument, we should go and purchase from the manufacturer, every pill and every powder and tincture, etc., a course which I decidedly do not advocate. I am entirely opposed to such a course, and wherever I can speak against our using so-called manufactured pharmaceutical preparations, I shall do so.

Mr. Moore.—I would like to ask Mr. Mattison whether the appearance is the only reason for which he claims we should go to the manufacturer. He has read us a very long paper, in which he has shown us they are not at all reliable in quality. He then says we had better go to them because they are better in appearance than any made by the retail men. If we are to go to the manufacturer for appearance sake, we shall be cheated in quality. I think it is a poor argument.

Mr. Mattison.—I think that the gentleman from Baltimore may examine any of the granular salts prepared by any of the retail pharmacists, and he will find they do not possess the effervescing properties of the products of the manufacturers making them largely.

Mr. Moore.—They appear many of them to be Epsom salt.

Mr. Mattison.—That is very easily detected by chemical reagents. The retail pharmacist can make them without difficulty, but they cannot unless very great care is used, and a great deal of attention is paid, which frequently cannot be spared in a retail store. They must have constant attention to make their effervescent properties well, and it is to their effervescent properties more than their appearance we owe the results attained.

Mr. Remington.—I am sorry Mr. Mattison has not thrown some light upon the manner of producing these salts. This paper, it seems to me, would have been much more a benefit to the Association if it had contained formulas, not how other manufacturers had made mistakes in making these salts, but how the manufacturer could make them, so that we may go to work and make salts for ourselves. I thoroughly indorse the remarks of our Secretary on this subject, and while it is interesting to know that English manufacturers do not do right, and it is very nice to know that some American manufacturers do, I think some of the rest of us ought to have a chance to make them for ourselves.

Mr. Mattison.—I gave the process of one of our largest makers, I think the largest maker, in this country. I don't know but any retail druggist can, as suggested there, as I believe the manufacturers do, simply take equivalent quantities of the materials and make granular salts. There is no difficulty in working out the formula. Take five ounces, for instance, of one, and six ounces of the other, with citric acid or tartaric acid. Citric acid is better; it makes a whiter product, more soluble, and of better effervescence. I don't think any of the manufacturers use tartaric acid. By taking equivalent quantities and pressing them through a sieve, drying them rapidly, they can be made, but they will not be as strong in effervescent power as if the apothecary made larger quantities. There is no reason why the apothecary cannot make them in sufficient quantities just as well as the manufacturer.

Dr. Pile.—We have a Committee on Unofficinal Formulas; why not direct them to propose formulas for such preparations?

Mr. Lemberger.—I desire to make a remark or two upon this subject. I feel very glad to learn the facts that Mr. Mattison has brought out in his answer in reference to impositions practiced upon us Americans by foreign manufacturers, but I must confess some disappointment in the answer to the query. I believe in sticking closely to the text of the query when I accept them for answer, and whilst I for one appreciate very much indeed the attention that has been given by the firm which Mr. Mattison represents, in the direction of salts that are reliable, I feel that the interests of pharmacy would be very much more advanced did the answer come in the manner which we have all expected. Nor do I think the interests of the firm represented by Mr. Mattison would be in any way damaged by their giving us a candid statement of the manner in which they prepare their salts, looking upon them, as I do, as a fair representation of good American granular salts. I rise more particularly to ask that this Association recommit this query to the hands of Mr. Mattison, with the hope that he will give us the light on the subject that we all desire. I believe that their interests pecuniarily will not in the least be damaged, but very much advanced.

Mr. Ebert.—I do not think we want any light on granular salts. I think that granulated salts and sugar-coated pills are upon the same basis, and the less we know about them, the less we use them, the better it will be. I do not know how granular salts are made by the manufacturers. I judge that it requires, as Mr. Mattison stated, a certain amount of apparatus, and that the dispensing pharmacist would not be very likely to go to the expense of getting a large kettle or pan to make them in, and I do not think it would pay us to do it. The best way we as pharmacists can do, is to keep the sale as limited as possible, of all such elegant pharmaceuticals that we cannot prepare behind our counters. I think that would be very much the best way. I do not wish to learn anything more about granular salts than I know now, and I know it is simply taking our time, and no money goes into the till in trying to make them, except you go into their manufacture like of sugar-coated pills.

Mr. Remington.—I differ with our friend; granular salts have been used and are used by physicians with great benefit, and they are a class of remedies that fulfil certain requirements. They are prescribed by physicians, and frequently have been found beneficial. I would like to make an amendment to Mr. Lemberger's motion which is before the house, that this subject of granular effervescent preparations be referred to the Committee on Unofficinal Formulas, as Mr. Balluff suggested, in the view of giving us formulas for their preparation, at the next meeting.

Mr. Kennedy.—For the information of the members, I may state that we have got the right man on that committee. Mr. Mattison is the Committee on Unofficinal Preparations, and he will be able to throw light upon this subject.

The subject of granular effervescent salts was referred to the Committee on Unofficinal Formulas.

Mr. Hancock read a paper on Powdered Blue Mass (see page 374) in answer to Query 8.

Mr. Hancock.—The powdered blue pill is largely used, and for several years it has been prescribed by physicians in my vicinity with entire satisfaction, and it is very easily prepared. Many years ago, when Mackenzie was one of the most prominent physicians in Baltimore, he made the powdered mercury and chalk by exposing it for a long time in a room, and there were some physicians in the city who especially recommended this preparation, and said in infantile cases it had a decided effect, far superior to that ordinarily found in the market. I have noticed by this exposure also, that the blue pill mass made in this way gradually darkened, which I attributed to the formation of protoxide of mercury, and I noticed also in comparing this powder with the powder furnished by the manufacturing chemists where it is made by machinery very rapidly, and quickly bottled, that the shade of color is decidedly different; it is much darker.

Mr. Ebert.—Has Mr. Hancock subjected this powder to a microscopic examination?

Mr. Hancock.—I have, with 200 diameters, and the globules are not seen, and in this way it is produced at a very trifling expense, while the other is a very expensive and tedious process, and the oxide is wasted to some extent.

Mr. Balluff.—I have made dry blue mass for many years by mixing one part of quicksilver with two parts of dextrin, which, I think, is preferable to sugar. After spreading it out on glass plates, and letting it dry in a warm room, I never found it turning moist. Made with sugar it will attract moisture.

Mr. Hancock.—I use the cane sugar, and with an experience of at least six years, I have never known it to absorb sufficient moisture to be noted.

Mr. Moore.—Mr. Hancock referred to a former preparation of hydrargyrum cum creta, considered by the physicians of Baltimore as superior to anything else. Indeed, they contended that thus made by exposure to the air, it contained no oxide of mercury, and for a long time we were compelled to purchase this. This preparation was exposed sometimes, to my knowledge, for six months, and every boy and customer who went into the store gave it a stir; if this contained no oxide of mercury, how does Mr. Hancock oxidize his in a few days? The physicians contended for that preparation, and it was a long time before we could discontinue its use.

Mr. Hancock.—Physicians often contend for things that are not exactly as they contend, and I am satisfied that that was the case. In the present instance the color indicates a change to oxide. Mercury ordinarily is not easily oxidized, and we know it can be taken in enormous doses without producing metallic poisoning. I have noticed in a treatise of the Rev. John Wesley, where he prescribes mercury for the colic. He orders a pound and a half to be taken in two-ounce doses, and if that does not answer, a live puppy was to be put down the patient's belly.

Mr. Ebert.—Some three years ago I took the liberty of writing to our colleague, Dr. Squibb, on the subject, asking him to make a powdered blue pill, as the articles we had furnished to us at different times seemed to be very inferior, and the Doctor wrote back one of his characteristic letters, saying he had spent many hundreds of dollars and much time for the purpose of making blue mass and powdered chalk with mercury free from oxide of mercury, but had not so far succeeded, and had made up his mind he never should make another trial. Now, if it is the oxide of mercury that we are after in powdered blue pill, that can be produced very easily. I, not being a physician, do not know really whether blue mass is to contain only metallic mercury finely divided, or oxide of mercury. It is exactly that point I wanted to get at by this query. I always thought that blue mass was simply finely divided metallic mercury, but Mr. Hancock's version of it is that it is oxide of mercury. If we want this, we certainly can easily obtain it without standing it about ten days or six months, as has been suggested. I have made many examinations of powdered blue pill, and found a number of samples where you could distinguish the globules of mercury with a power of about sixteen diameters. I had a sample of powdered blue pill sent me the other day from a colleague in Denver, Col., and he informed me, knowing I was interested in this matter, that he had succeeded in making a very nice article of it, and would send me the formula for publication. I placed it under a magnifying power of twenty diameters, and the mercury was there, and when I placed it under sixty I had no difficulty in perceiving it. What I want to come at is, are the virtues of blue pill due to oxide of mercury or to metallic mercury?

MR. HANCOCK.—In reply I would state I have consulted quite a number of authorities, and almost invariably they have attributed the virtues of blue mass to the trace of oxide to be found in it. Attfield and Bloxam make the statement, and I think it is also in Clark. In the U. S. Dispensatory the question is left an open one; it is not decided whether it is metallic mercury in fine division, or whether it is the oxide which is formed; but that oxide is formed I have no doubt at all, and by this exposure there is a gradual increase of oxide.

MR. REMINGTON.—In the Proceedings of this Association for 1868, will be found a paper written by me when I was with Dr. Squibb, in Brooklyn, on a kindred preparation—an examination of the mercury and chalk of commerce. Nine samples were examined, one of which, I think, was the Baltimore preparation already alluded to, made by the process which originated with Dr. Mackenzie. I found in it not less than 26 per cent. of the red oxide of mercury, and if such a preparation had been given to an infant in the ordinary dose, poisoning would have resulted in a certain degree; it must be regarded as an injurious preparation when it contains as large an amount of oxide as that. Now, then, it is reasonable to presume that this oxidation was the result of time and exposure, and if it was—I think Professor Procter handed it to me, and it was about ten years old—it is fair to presume in eight years it had contained about 20 per cent.; in six years 15 per cent., and so on all the way down. Now, if the oxidation is what is to be aimed at in the preparation of mercury, it is news to me. I thought that honey was introduced into blue mass and several other mercurial preparations for the purpose of preventing oxidation, and if Dr. Squibb's preparations are of any account, they are all based on that principle. The mercury and chalk is made after dividing the mercury with honey. It is made so that a small amount of honey is retained in the preparation, for the purpose of preventing oxidation by holding the globules.

Mr. Hancock.—I have made the mercury and chalk by the same process, and I have noticed when it is thoroughly made, it corresponds very well with the preparation furnished by Dr. Squibb, but by long exposure that preparation becomes dark, and not only this, but the mercury and chalk I have been using for the same length of time; but when properly kept, there is surely no danger from the red oxide forming. I have never known any objection made to the preparations I dispense, and I use considerable of both. Experience proves there is nothing deleterious in it.

Mr. Ramsperger.—This preparation is so uncertain it ought to be abandoned instead of being continued in our Pharmacopœia. I believe the effect of this preparation depends in a great measure upon the stage of oxidation in which it is, and that metallic mercury in such very small doses has very little effect. When it is given in large doses it is given for its mechanical action, its specific gravity. This does not hold good in small quantities. I believe the effect depends upon the mercurous or mercuric oxide which it contains.

Mr. Maisch.—This is a question that cannot be settled by this Association, or any member of this Association. It properly belongs to the physicians. If they find that finely divided metallic mercury which has not oxidized, is what they want, we shall have to find some means to divide mercury and keep it in a metallic state, so it will not oxidize. It strikes me that the effects of this preparation are probably due, as has been stated by several of the gentlemen that spoke before me, to the smaller or larger amount of mercurous or mercuric oxide that has been formed. If that view is correct, we ought to have a preparation that contains a definite amount of the oxide, and abandon the others. The old-fashioned way of making preparations, and increasing their efficiency by exposure without knowing exactly what takes place, I think ought to be discountenanced as much as possible.

Mr. Ebert.—The subject has often presented itself to me, and whenever this preparation has been prescribed by physicians, and I could possibly speak to them, I have always recommended them to use mercury and chalk. I would say, "If you use that you will get a definite preparation, while if you use powdered blue mass, I cannot guarantee its virtues." I have found a number of physicians from whom I have from time to time received instructions in regard to powdered blue pill, who have dropped it altogether, and have prescribed mercury and chalk, and I must say I have never heard any complaints. I agree with our Secretary, that whenever we find such a preparation where there is such a variable strength and composition so we cannot judge of it, we should at once inform the medical profession, so as to do away with it. The only rational way to insure the progress of medicine is to have definite remedies.

Mr. Hancock.—I don't like to consume the time of the meeting, but I will make one other observation in this connection. I did experiment with metallic mercury* by exposing it in a moist atmosphere. There is a film formed over it which is oxide of mercury. Now if the oxide of mercury is formed on the surface of metallic mercury in a moist atmosphere, is it not reasonable to suppose that oxide will be formed with evenly divided mercury? I am glad to see the discussion has taken the shape it has. It might be continued as a query, and some definite results be obtained.

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* **Was it chemically pure mercury?—Editor.**

DR. PILE.—In the Dispensatory of Wood & Bache for 1869 is given a formula, by Charles Bullock, of Philadelphia, as follows: "Fine-powdered elm bark and mercury, each one pound. Moisten with alcohol and rub together, adding more alcohol as required until the mercury is completely extinguished, then expose to the air until thoroughly dried, and mix with one pound sugar." It takes so much alcohol, which adds considerably to the cost. If we can get rid of that, the other part is simple, but water alone makes it into a thick cohesive mass, which is difficult to dry, and I suppose the mercury would become oxidized, and the mass sour; so I found the alcohol was far better.

MR. BALLUFF —This blue mass is one of the old imperfect and indefinite preparations, which are hanging along through the English and American Pharmacopœias. This particular one has long been abolished in the German Pharmacopœia. I think we shall have to keep it until the next revision of the Pharmacopœia, but while we are obliged to have it, and have it in a form to prevent oxidation, I think the powdered blue mass is the more suitable preparation.

MR. REMINGTON.—I would like to state as a matter of interest, that Mr. Hancock has consented to accept a query on this subject of blue mass, so at the next meeting we may hope to have some methods in which to make a preparation containing the smallest quantity of oxide possible with sugar and mercury, and try it alongside of preparations made containing the mercury in globules.

When Query 41 was called up, Mr. Remington stated:

MR. REMINGTON.—Mr. Procter called upon me the day before I started from Philadelphia and said he had no written answer to make in regard to this subject, but after trying various means of preserving garlic he found the best plan was to hang it up in a dry atmosphere. He had tried the alcohol process without very much success, and after many experiments he found there was no way so good as hanging it up. It may be of interest if any of the members know how to preserve garlic. I don't know any better way.

The President stated that Prof. J. Lawrence Smith was present and desired to address the Association; he was, on motion, invited to speak, and addressed the meeting as follows:

Gentlemen of the Association, I feel like one of you because I am of you, and while I am not now engaged in preparing, or otherwise investigating matters connected with pharmacy, many of you doubtless know that I devoted a portion of my life in my best years to investigations of matters connected with your specialty, by establishing first with my friend Dr. Squibb, the chemical works, which institution I think was the first established in the country which started upon the principle of giving to the medical profession preparations made strictly according to the rules of pharmacy; and after Dr. Squibb separated from the chemical works here he continued in Brooklyn on the same course. This had a good influence in inducing other establishments in this country to follow out that rule; from that time up to the present you all know preparations have improved very much in value. If it was not out of place I might specify several to illustrate that. However, as I say, I am one of you, and feel that you have an interest with me in the special object to which I shall call your attention. Pardon me if I am a little scattered in my remarks.

This year, 1874, you will recollect, was celebrated as the centennial of chemistry at Northumberland, where Priestley passed the last days of his life, and on that occasion I had the honor of addressing that body of men, and those who were present will recollect that I made the centennial a little broader than that. That was the centennial not only of Priestley but Scheele, a druggist who commenced and continued his honorable labors as a druggist. We are still owing a vast deal to the discovery Priestley made in regard to oxygen. Modern chemistry owes really more, however, to the druggist Scheele for its rapid development than to any other practical worker. It was he who brought the materials to Liebig, whose philosophic mind put them together in such a shape as placed us upon the road where we now are in chemistry. Liebig could not have moved without Scheele. He was not an experimental chemist; he philosophized upon the works of others, and generalized upon them. Scheele had not that gift, but as the discoverer of chlorine and of various vegetable acids, his numerous experiments upon other known bodies have been very marked. Scheele's discovery of chlorine produced more wonderful effect upon the world than any other single chemical discovery; so I say here we have modern chemistry having its great material basis laid by an apothecary. About fifty years afterwards we have another and important branch of modern chemistry, which was imperfectly developed up to that time. We find its starting-point and its present great development due to another apothecary, viz., the Darmstadt clerk Liebig. He learned his first chemistry as such, and when he went to Paris to pursue his studies he developed that portion of chemistry, viz., organic chemistry, which has produced such wonderful results. In fact we now trace directly or indirectly a great many of them to Liebig. All these great discoveries in reference to the transformation of products, for instance, of coal, if he did not get at them directly, came out by his indirect labors and by his teaching men how to work. Hofmann, who was the first who made the great start in the formation of those colors which now produce such a marked effect upon the commercial interests of the world, he was a pupil of Liebig, learning his method of investigation from Liebig. Chloroform and many other bodies with which we are now familiar we owe directly to Liebig, or to the methods which he taught to his students. Hofmann is now at the head of the effort that is being made in Germany to erect a Liebig memorial. The object is to erect one at Giessen and one at Munich. We, as American druggists and chemists, do not feel especial interest in the one at Munich. The Bavarian government can attend to that, but we feel an interest in the one at Giessen, because there he first laid the foundations for chemical research, such as is now carried on, and constructed that famous laboratory. Those who are interested in this memorial wish to make it as broad as possible. As you are well aware, there is no name of any chemist, or of any man, except it be Washington and one or two others, that is so widely known as Liebig's, which is known to the agriculturist, the chemist, the druggist, the physiologist, and the physician, and which is familiar to our children. Now the committee in Germany requested several of the chemists in America to get up some proportion of this memorial. They thought proper to place my name at the head of it. The names of Prof. Gibbs, of Harvard, and Prof. Horsford are associated with mine in this. At the centennial at Northumberland I thought it was a fitting time to make an appeal for that memorial and send it to Germany, and we sent out nearly one thousand dollars for that testimonial. My impression is, if you gentlemen feel interested in subscribing to this memorial, it would be well for you to appoint a committee of two or three to associate with this committee that has been appointed to get up, through the druggists of this country, something for this memorial as a druggist's memorial, because you are to confer an honor upon a druggist who has done more to promote chemistry than almost any other man. I think there is hardly any prospect that any man can have a more worldwide renown in this particular branch than he. I will not detain you longer, but will throw out this suggestion. I shall be pleased to have you act upon it, and have no doubt those in Germany who are interested in this matter will be equally pleased. Germany is the great school probably in the world now for pharmacy, precise pharmacy, as it has been more thoroughly studied in that country than in any other; and we owe a good deal to the man whom I have alluded to. I therefore make these remarks, hoping you will in the course of your meeting take some steps to do something to help on this memorial. If you get a dollar or half a dollar from the druggists of this country we can get a handsome sum towards the memorial for this great and good man.

MR. EBERT.—It has given me a great deal of pleasure to hear Prof. Smith speak of the Liebig memorial, but to place this Association somewhat right, and to show that we have not neglected it thus far, but that we have already taken some action upon it and made some recognition of it, I would like to read a portion of the President's address which was delivered at Richmond last year. It reads as follows:

"In common with the scientific world at large we have met a serious loss in the demise of Professor Liebig. Although not connected with us as a member, we cannot forget that we, as pharmacists, had some claim upon him, as his taste for the science in which he became a leader was fostered during his apprenticeship to the apothecary business.

"A movement has been inaugurated to erect, in the city of Munich, Germany, a fitting monument to his memory, and we hope that American pharmacists will generally participate by contributions in aiding this worthy undertaking."

Prof. Liebig did not serve as druggist's clerk; he was apprenticed for two years in the city of Darmstadt, in Germany, to the drug business. From that he got his first taste for chemistry. We were not aware that they were expecting to erect two memorials. The circulars that have been distributed by the German chemists have generally alluded to the one at Munich. I am sorry to see they are going to divide their effort and erect two. I should think that one great memorial would have been much more desirable than two; so if there are two I hope we will aid both of them.

Prof. Smith.—He was employed as an apprentice very much in the same sense that we have many here. I asked Prof. Hofmann about this question of two memorials. It arises from a little jealousy. Those in the south do not want to give up the idea of having a memorial placed in the south, for his great reputation was made at Giessen. He was not brought to Munich until he was as large as he ever became afterwards, and the proper place for a memorial should be Giessen. It is the desire to satisfy the two sections, and the Bavarian government has been very liberal, and I suppose it will take upon itself to contribute a great portion of the money. The monument there will be put in a city where there is a great deal of attention paid to the fine arts, and in which they have every means to produce a worthy memorial. I think they will place a more imposing monument at Munich than at Giessen, but it is important that we should have some monument where he worked out his greatness.

Mr. Balluff.—In this connection it is proper to state that some part of the pharmaceutical profession in the United States has taken action, and sent contributions to this memorial. The German Society of Pharmacists in New York have sent a handsome sum towards the memorial.

Mr. Ramsperger.—I would like to ask Prof. Smith if he knows who is at the head of this second memorial fund. I was the treasurer of the Literary and Scientific Society of German Apothecaries in the city of New York, and I sent this contribution to Prof. Fehling, of Stuttgart. I did not know at the time of another memorial. It would be very interesting to know who are at the head of this second enterprise for the Giessen monument, so we may know to whom to send the contributions in future.

Prof. Smith.—Prof. Hofmann is the chairman of the commission which has charge of the whole matter of getting up the memorial. They have made a compromise; they have arranged for having these two memorials, and it is all one commission.

Mr. Peixotto.—It seems to me to be pertinent to this subject that we take some action, if not as an association, as individual members, in our different States as American pharmacists. It strikes me that coming from the Association, the appointment of a committee from each delegation or from each State would have a very beneficial effect. They could, as sub-committees, issue circulars to all the pharmacists that they are ready to receive contributions, and at the next session of the Association present their report of work they have done. In furtherance of that I will move that one gentleman from each of the delegations be appointed a committee for this purpose.

Mr. Ramsperger.—I move to amend that we extend it, not only to members of the Association, but that contributions be invited from others.

Mr. Peixotto.—I will say all druggists, either belonging to the Association or not.

Mr. Ebert.—Would it not be well instead of having so large a committee, to have a small committee who are to receive this money, and to whom any druggist in the country may send his contribution, because if you take one from each delegation, druggists outside who are not familiar with this organization might feel as if they were simply helping some local organization towards swelling their amount, and would not send any money for the purpose. Why not have a general committee appointed, regardless of the different delegations who are to receive the contributions of the druggists of this country for that purpose. I think it would have a tendency to do away with any feeling of localism that might be brought up, and we might collect a large sum of money, because the American Pharmaceutical Association is the representative of the pharmacists of this country.

Mr. Peixotto.—Members from different cities would be more likely to reach members from their several cities than a committee, but I have no objection to a general committee if they can do the work as well.

Mr. Hancock.—I desire to ask Prof. Smith if this contribution is made next year at our meeting, whether it will be in time. I understood, I think, from him, it would take two or three years.

Prof. Smith.—Yes, sir. Last week I wrote Prof. Hofmann that I felt perfectly confident of complete success in the matter, but a thing of this kind might be a little tardy, and I thought he might have to wait on Germany as well. I think we shall have him over here in 1876, and by that time we should be able to give him something very handsome towards this memorial, as a testimony of the esteem in which we hold Prof. Liebig.

Mr. Hancock.—The motion now is to appoint a committee consisting of one member from each delegation represented in this meeting. Is there a motion to amend that?

Mr. Peixotto —The amendment was in regard to asking contributions of gentlemen outside of the Association.

Mr. Hancock.—That course to me is the best method; to let one member from each delegation be appointed as that committee, because as that committee would come from the important cities in the country, they could receive the contributions of the members of the pharmaceutical profession in the respective cities, irrespective of their connection with the Pharmaceutical Association. I think this fund should come through the American Pharmaceutical Association. It is the representative of American pharmacy, and it is to my mind very proper that it should come through them. I do hope towards this enterprise every pharmacist will endeavor to contribute something. If he is not able to contribute a handsome sum, let him give, even if it is a very small sum, because Prof. Liebig is the man of all other men in science who should be esteemed by the pharmacists as well as the chemists. We should regard and recognize the labors of men like Prof. Liebig. In so doing, we are doing a great deal to stimulate others to earnest efforts in science. We do not look upon him as a German, or as a representative of any nation at all; he is a man who belongs to the world; he is the representative of science, and I remember very distinctly his expression when he spoke of scientific men, and men who sought scientific knowledge for the reason that it might benefit humanity. He said that the scientific man belonged to the world, and that he should not be restricted by any nationality.

The American Pharmaceutical Association could by a little effort on the part of the gentlemen composing this committee, by bringing the matter to the notice of members of the profession in different cities during the year, be able to collect quite a large sum by small contributions from each member. That will do a great deal to honor American pharmacy in this enterprise. I hope that Professor Ebert will not urge his suggestion that a small committee be appointed.

PROF. SMITH.—We desire, and I have conferred with three of my colleagues in this matter, we desire that two or three members from the Pharmaceutical Association should be added to this commission so we can be in connection. We do not know exactly who to apply to in regard to pharmacy, and we should like to have two or three of your members on this commission, which is a central commission. I think the idea that is held out about each delegation using special efforts to circulate this in their own neighborhood a very excellent one.

MR. PEIXOTTO.—Then I would add to my motion that the delegations form a sub-committee, and that the President appoint a general committee of three for the sub-committees to report to, and that the general committee correspond with Professor Smith.

MR. EBERT.—I think we can easily arrange this. Let a committee of three be appointed by this Association, to be added to the commission. Let that committee then use the proper means for getting contributions which is usually done by sending out circulars to the trade at large. Let this special committee send circulars to each organization that is represented in this body, asking them to appoint among themselves a sub-committee, and by that means collect contributions. At the same time let that not be the stopping-point, but let this committee of our organization send a circular to every druggist in the land, asking him either to contribute with these local committees, or the committee at large; and in that way you will represent American pharmacy properly.

MR. MOORE —I offer as a substitute that this Association appoint a committee of three to act in conjunction with the chemists' committee, and that each delegation appoint a special committee to aid in carrying out this object.

This substitute for Mr. Peixotto's motion was accepted by the original mover, and then adopted.

The Secretary announced that an invitation had been received from Professor Yandell, in the name of the medical faculty of the University, to visit that institution this afternoon. A motion to accept the invitation and appoint the hour of 3 to 4 o'clock for this visit, was withdrawn, when a motion, offered by Mr. Ebert, was adopted, that the invitation be received with the sincere thanks of the Association, but respectfully declined for want of time.

The President appointed the following Committee on Maximum Doses: William Saunders, London, Ont.; Louis Dohme, of Baltimore; and Wilson H. Pile, of Philadelphia; also the following Committee to report on the Publication of Papers in Advance of the Proceedings: A. W. Miller, of Philadelphia; J. F. Hancock, of Baltimore; and Ottmar Eberbach, of Ann Arbor.

The Committee on Credentials read the following report:

To the American Pharmaceutical Association.

The Committee on Credentials respectfully report that a dispatch has been received from the New Jersey Pharmaceutical Association, dated September the 7th, by which this Association is notified that Messrs. E. P. Nichols, A. J. White, R. W. Vandervoort, G. A. Mangoll, and P. W. Lovering had been appointed delegates to represent their Association.

Mr. A. J. White being present, the committee requests the insertion of his name on the list of the delegates present at this session.

The committee also received information by letter that Messrs. Hugh Blair, Polk Miller, T. Roberts Baker, Henry Bodeker, and Ira W. Blunt are the appointed delegates of the Richmond Pharmaceutical Association.

Paul Balluff, *Chairman.*
Joseph Roberts,
William Saunders,
Committee.

Louisville, Ky., September 10th, 1874.

Mr. Fehr.—I withdraw my name from the list of delegates. I was appointed as an alternate to act in case any one of the others would not come; when I came here I did not see any one of the delegates, so I thought it was my duty to present myself, as I was elected as an alternate.

On motion, the report was received, and the gentlemen named therein were admitted as delegates.

The Secretary read an invitation from Prof. J. Lawrence Smith, inviting the members of the Association to visit him at his residence (71 Broadway, between Second and Third Streets) on Friday evening, between the hours of 8½ and 12 o'clock. The invitation was, on motion of Mr. Baker, accepted with the thanks of the Association.

The reading of answers to queries being resumed, Query 42 was called for.

MR. REMINGTON.—I will report verbally upon it, that I have pursued a number of experiments in regard to extracting the virtues of chenopodium with petroleum benzin, and found it will not accomplish it. The last liquor which came through from the chenopodium was tasteless and inert. I was able by subsequent percolation with alcohol to extract a good deal of active matter. I think the query now is fully answered. Last year I wrote a paper upon it, in which I think I proved that benzin was not a good menstruum for the extraction of a drug like buchu, and I can now give a similar answer in regard to chenopodium In a general way I may say it has very little merit in this direction with drugs of that character.

MR. MAISCH.—I desire to ask whether the extract that was obtained after previous exhaustion by petroleum benzin, possessed anthelmintic properties?

MR REMINGTON.—I did not try a physiological test with it; but in the case of buchu I did so, and I found the extract which was subsequently obtained by percolation with alcohol had diuretic properties. I did not try it with the chenopodium, but it had the odor, taste, and all the sensible properties of the alcoholic extract of chenopodium.

MR. MAISCH.—I supposed the medicinal virtues of chenopodium were due solely to the volatile oil, and if that is the case, petroleum ought to exhaust everything possessing medicinal virtues.

MR. REMINGTON.—It does not seem to extract all of the odorous and resinous principles. If the Association should be willing to leave the subject I will endeavor to report further upon it, but having met with no success with buchu or chenopodium, I am rather inclined to think its use in that direction is very limited.

Query 43 was answered by a paper on Colchicia, written by Mr. Eberbach (see page 453).

Mr. Remington read the following note:

TOLEDO, OHIO, August 21st, 1874.

In regard to Query 44, "What is the best fluid preparation of tartrate of iron and potassium, for dispensing, that will keep well?" I am compelled to report, "No satisfactory progress made."

I shall, however, continue experiments at leisure times, whether the Society deem it best to continue the query to me another year, assign it to some one else, or drop it altogether, which, in view of the comparatively easy solubility of the salt, when assisted by a little heat, and the consequent small practical value of a *solution* kept ready for dispensing, when the difficulty, not to say impossibility, of keeping the solution in good condition is taken into consideration, would, perhaps, be the best plan.

Deploring the inability to be present at the approaching meeting of the Association,

I remain yours,
C. HOHLY.

The President vacated the chair, and First Vice-President Roberts presided until the close of the session.

A paper by Mr. J. M. Ayers, on Cleanliness as a Pharmaceutical Virtue was read in answer to Query 48 (see page 348); and one by Mr. Bedford on the Quality of the Chemically Pure Mineral Acids of Commerce, in answer to Query 50 (see page 429).

MR. MAISCH.—It is extremely difficult to obtain chemically pure nitric and muriatic acids free from traces of iron. I usually am compelled to make them for such purposes where the presence of this little iron would be objectionable.

When Query 52 was called for, Mr. Remington read a letter from Mr. C. C. Fredigke, stating that even if an organic analysis of poke root and berries was made, it would still be a conjecture to which of the principles isolated the curative effects belong, rendering physiological experiments and pathological inquiries necessary.

The query was, on motion, discontinued, after which the Association adjourned until 3½ o'clock in the afternoon.

Fifth Session.—Thursday Afternoon, September 10*th.*

The meeting was called to order at the appointed time, President Diehl in the chair. The minutes of the preceding session were read and approved.

The Committee on Credentials handed in the credentials of Mr. Enno Sander as delegate from the St. Louis College of Pharmacy, who, on motion, was admitted as such.

MR. SAUNDERS.—I would like to read a resolution which I have prepared, and which I am sure will be in harmony with the feelings of the members present, in relation to our late friend Prof. William Procter. It is not intended to interfere in any way with a more extended memoir which is to appear of our deceased brother.

Resolved, That in view of the great loss which this Association has sustained in the death of one of its founders, Prof. William Procter, of Philadelphia, we desire now to express and place on record our heartfelt sorrow at this sad event, which has deprived us of the presence and valued counsels of one of our best beloved members; and while recognizing with tenderest memory his great worth and lifelong labors in the interests of pharmacy, wish by this resolution to render a spontaneous and grateful tribute to one who has ever been ready to lend a helping hand in every good work, and whose genial social qualities and unvarying kindness to any who needed help, as well as his great scientific attainments, had endeared him to us all; and while fondly cherishing his memory, would convey our tenderest sympathies to his bereaved family.

Resolved, That this resolution be published in the next volume of the Proceedings, and that the Secretary be requested to transmit a copy to his family, signed by the officers of the Association.

The resolution was unanimously adopted.

Mr. Heinitsh read the following report:

LOUISVILLE, KY., September 10th, 1874.

TO THE OFFICERS AND MEMBERS OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION.

GENTLEMEN: Your committee appointed for the purpose of selecting the place and time of the next meeting of this Association would respectfully offer for adoption the following resolution:

Resolved, That the next annual meeting be held at Boston, Mass., commencing at 3 o'clock P.M., on the second Tuesday (14th) of September, 1875.

Respectfully submitted,
CHARLES A. HEINITSH,
J. F. JUDGE,
WILLIAM NEERGARD.

The report was accepted, and the resolution laid before the meeting.

MR. COLCORD.—I move an amendment. I move it be one week earlier than that, the first week in September. I should think that would be better.

MR. SAUNDERS.—I rise to offer an amendment; that the next meeting be held in the city of Toronto, Ontario; and, on behalf of the counsel of the Ontario College of Pharmacy, I am commissioned to tender to the Association a hearty invitation to visit us at that time; and, if it can be so arranged, we shall be very much pleased to show you some hospitality.

MR. EBERT.—I second this amendment.

MR. HANCOCK.—I appreciate the invitation, and would, as a member, take great pleasure in accepting it, but it was generally understood last year that Boston was to be the place of meeting next year, and I think it would be more acceptable to the members generally to adopt the report of the committee. I hope though in some future year we may meet with our friends in Canada, but there is a very general expression among the members for Boston.

MR. EBERT.—I do not see why we should delay it any longer. We have been to Boston three times; that is more than the "lion's share." We have never been to visit our friends in Canada. We have had a delegation from Canada, and from Ontario College of Pharmacy, at nearly every one of our meetings for the last ten or twelve years.

THE SECRETARY.—Not for that length of time.

MR. SAUNDERS.—I think the last New York meeting was the first one.

MR. EBERT.—That was in 1867; I stand corrected.

MR. SAUNDERS.—Detroit was the first, 1866.

MR. EBERT.—We have been to Boston; we have seen everything that is to be seen there. If we could go over into Canada I think we might possibly learn something, and improve ourselves; and I am heartily in favor of going to Toronto to see and receive the hospitality of our Canadian colleagues.

MR. COLCORD.—That is the Chicago view of it, gentlemen.

MR. MAISCH.—I rise to express myself in favor of meeting next year in the city of Boston. We have not met in the New England States for ten years, since 1865; and in the West we have met very frequently since then. It is true that we have not held any meeting in Canada, and I should like very much to go there, but there is a great deal to be done at our next meeting preparatory to the meeting for 1876, which is to be held in Philadelphia. The mere fact that we have met three times in Boston is to my mind no reason why we should not meet there the fourth time. The first two meetings which were held in the city of Boston took place there because at that time there was hardly any other place to meet, except three cities on the Atlantic coast, and it was very natural that the meetings at that time fell to one of the cities once every three years, or about that time. We have met in the city of Philadelphia four times, and we propose to go there again in 1876, so that that alone would not be any reason for not going to Boston. That portion of our country, I should think, should now be considered as entitled to another meeting.

MR. REMINGTON.—There are a very great many of our members who are not here with us at Louisville. On every occasion when the subject of the place of meeting has been brought up, and it has been brought up a number of times since our meeting at Richmond, there has been but one place mentioned, and that place is the city of Boston; and not having met there for ten years, and having met in the West for three of the later meetings, St. Louis, Cleveland, and Louisville, it seems to me eminently proper that our next meeting should be in the city of Boston.

MR. EBERT.—Prof. Maisch mentioned that he thought Boston was entitled—

MR. MAISCH.—I said New England was.

MR. EBERT.—New England was entitled to this meeting. We have a very large membership in Boston, and they are very well represented. The hospitalities that have been extended to us in Boston whenever we have gone there have been such that we have always left with regret, and with a feeling like going back; but the object of this Association, no doubt, is to go where it can do the most good. Now the same cry was raised against Richmond.

We had spoken for a long time about going South; we had not attempted to go farther than Washington until at the Cleveland meeting, by some mere accident, the cry was raised, "On to Richmond," and we went there, and I doubt whether any one who was there ever enjoyed a meeting more than the one we had at Richmond. We went there among strangers; we did not have but one or two members. We were all strangers when we went to Richmond, but such a meeting we have not had for ten years. We formed pleasant acquaintances, and we did good which will last as long as this Association. We have done for Boston and Boston has done for us as much as we can mutually do for each other. Now let us go to a new place; let us make a break and go to the city of Toronto on this occasion, and I am positive we will come back well satisfied. It is said that a certain section of the country is entitled to us. I think we ought to throw that aside and ought to go just where we may do the most good. We will have a splendid time in Boston I know; but let us go among strangers, and try to disseminate the good that our Association is endeavoring to do, and for that reason I heartily approve of Mr. Saunders's invitation to go to Toronto.

MR. SAUNDERS.—There is one aspect of the case which has not been put, that is, the economy. It is very economical to go to Toronto. You can get excursion tickets from all parts of the world to Niagara, which is near Toronto; and to the members whose pockets are not lined with greenbacks, that is an object.

MR. HEINITSH.—We selected the second Tuesday because that would be a full moon, and a great many travel by night when it is pleasanter to have the moon than not.

MR. HANCOCK.—I must express myself in favor of Boston, and after we have celebrated our Centennial, we can step over into Canada and enjoy the hospitality of our friends there. Before going to the Centennial I would like to go there to polish myself up, by rubbing myself against the "Hub of the Universe." I am sure our friend who is here to beseech us to meet there next year will be disappointed if we do not go, and his hair will be grayer than it is.

MR. COLCORD.—If you come to Boston we shall be happy to see you, and shall give you all the accommodation you want. I am not here to advocate Boston, but as I told you, it is always safe to go against Chicago. We do not mean to ask for the meeting, but we expect to get it just the same as if we did.

The question was taken on the amendment offered by Mr. Saunders, and a division being called for, sixteen members were found to vote in favor, and twenty-nine against it; so the amendment was lost. The question was then taken on the original motion to meet in Boston; it was carried.

The time of the next annual meeting remaining to be decided upon, the amendment of Mr. Colcord was next in order.

Mr. Colcord.—I have a word to say about the time. Boston is farther north, and we always have cool nights from the first of September. I think it is a little nearer the time when the vacations are taken, and you can get a rather larger meeting the first week in September than the second. Chicago goes for the first Tuesday in September, and I make it as a motion that the meeting be the first Tuesday in September.

The amendment was carried, and the entire resolution as amended was then adopted.

Mr. Saunders.—Although Canada supported by Chicago has failed to carry the day, I would like to have the Association bear the suggestion made by Mr. Hancock in mind. It may come Canada's turn after the Centennial, and we should be very happy to welcome the Association at any time when we can find a majority to vote for Toronto.

Mr. Colcord.—Boston would go with Chicago on that motion.

Mr. Baker on behalf of the Business Committee, called up the amendments to the By-laws, of which notice was given at the meeting held in Richmond. The amendment to Chapter II, Article I, to strike out $500 and insert $600, was, on motion, agreed to.

The second amendment laying over from last year, to strike out $300, and insert $400, in Chapter IV, Article IV, was likewise adopted.

Mr. Colcord.—There was a proposition made last year to prolong the meetings and have more time to read the papers in full. It was suggested to have a week. I would like to get an expression on that in order to know how to arrange the next meeting properly; whether it would be the sense of the Association that they would like to spend a week in Boston so we can accomplish more, and have more reading and discussions at the business meetings. If the sense of the Association is that the meeting be continued five or six days, I would suggest that our local committee on arrangement in Boston would bridge over the Sabbath to the acceptance of all parties; and if you want to make any extra arrangements for the Centennial we shall have a week to do it in. I would like to know whether it would be the sense of the Association to prolong the session a week.

Mr. Balluff.—I do not think we would like to continue a meeting during a whole week. Four days at the most is the time which most of us can spare, including the time for going to and from the meeting. I think a week would be too long, and the meeting would thin out by the third or fourth day so there would hardly be a quorum present. At the closing session of the third day there are sometimes but few present. The members hurry away and the meetings thin out.

Mr. Colcord.—That was one reason I made the suggestion; so that the last day we could afford to lose, and you can thin out as much as you have a mind to. It was to cover that point that I made the suggestion of having the Association meetings last a week, and if you want to shorten that half a day, you can close when you want to. My impression is you could do it, and if the members understood it that they were to be there a week, they would prepare for it. You will undoubtedly want to meet more than a week in Philadelphia in 1876, and whether you will not try that plan of having a week's session in Boston is the suggestion I make.

Mr. Balluff.—We never put a limit to the time of the meeting. It limits itself every year, and I think we should not decide upon having a certain number of days for the Boston meeting. Let it develop itself as it will be necessary for the business that comes before the meeting.

Mr. Wright.—Could not some time be saved in these papers where they contain long tabular statements of processes, etc., by not having those portions read which cannot be possibly followed to a conclusion, and a result stated without reading the full body of it? I think there has often been a great deal of time taken up by statements of that kind. It is absolutely impossible for any one, however well posted he may be, to follow a report of that sort. The conclusions might be concisely stated, and so the reading of the paper be very much condensed.

Mr. Ebert.—Our meetings could be made much more interesting, and I am inclined to think have a larger attendance, if papers are not read hurriedly. If we come prepared somewhat on the subjects of the queries in print, we could have more discussions on them, and these discussions would have a tendency to make the meetings more interesting, and would prolong them more than they do now. We find in reading the Proceedings, after having attended the meetings, a great deal of very interesting matter which did not strike us at the time the paper is read, because it is sometimes done quite hurriedly. We are all the time hurrying to get through, because usually the local committee has some excursion; something is brought up we wish to accept, to be polite, and the result is, we do not go sufficiently into the merits of the papers, and into the *pros* and *cons* of the papers. By devoting a little more time to that, so that the sentiments of the different members and their knowledge could be brought up, these meetings would be much more interesting; they would not fall off towards the third day, and we could prolong them a day longer.

Mr. Remington.—I should like to go to the meeting in Boston, in 1875, with a decided understanding that the meeting should continue a week. I regret very much that the condition of affairs is as it is at present. From the position I have had at this meeting, I have had an opportunity of seeing and knowing that a great deal of information that is contained in these queries, has to be hurried over and rushed through in order to get through. The discussions which these papers elicit are oftentimes the most interesting parts of our meeting, and I am very glad indeed to hear the remarks of our members on the subject. There is a point about the time, that some may have overlooked, and that is this, that we know pretty well the course of business, and that these scientific papers will come up towards the latter part of the sessions; then those members who are necessarily restricted to a few days can so arrange it as to come there at the second or third meeting, in order to come in for the scientific queries, or they can so arrange it to come at first and go away at the middle, if they are compelled to do it. But we ought to have more time for these papers.

MR. BALLUFF.—The best way to create a discussion on a query would be, if two or three gentlemen would take the same query. Then there would be an opportunity to hear whatever opinions and discussions would arise.

Mr. S. A. D. Sheppard was nominated Local Secretary, and the President, on motion, directed to deposit an affirmative ballot in favor of the nominee. Messrs. Ebert and Remington acting as tellers, reported the election of Mr. Sheppard.

The question was then taken on the motion to prolong the next meeting of the Association to one week, which was negatived by a vote of twenty-seven nays against sixteen ayes.

MR. HANCOCK.—I rise to explain my vote on this subject. I am opposed to a one week session, because I think if we prolong the session in order that discussion will be indulged in on the papers read, we will be just as far from the solution of the subjects presented as we are now with a four days' session. In considering this matter, however, of cutting off discussion on the important papers that are brought up, and having them read in such a fragmentary manner, it suggests to my mind the propriety of permitting the journals to publish in advance of the Proceedings the papers that are read here. For myself I will explain that I have listened with a great deal of attention to some of the papers that have been read at our meetings. They have made impressions upon my mind, they have followed me for some weeks after the meetings, but by the time the Proceedings were given out, all interest would have been lost in the subjects, and I would probably not have time to read them in the volume of Proceedings as I would at odd times, if they appeared from time to time in the journals. I regard this action of the Association as illiberal. It should have given to the public an opportunity to become acquainted with the contents of those papers by allowing them to be published.

The Business Committee called up the amendments to the By-laws offered at the fourth session.

MR. BAKER.—Section 4 of Chapter VIII, Article II, now reads:

"The President shall appoint a committee of three persons to examine the credentials of delegates, which committee shall attend to that duty, and report to the Association as soon as practicable, when the Secretary shall call the roll, noting the names of the delegates and members in attendance."

It is proposed to substitute for that the following:

"The President shall appoint a committee of three to examine the credentials of delegates, which committee shall attend to that duty. The President's address shall then be read, after which the committee shall report to the Association, when the Secretary shall call the roll, noting the names of delegates and members in attendance."

The adoption of this will necessitate the striking out of Section 11 of the same chapter which reads:

"The first session shall close with the reading of the President's annual report, and the reference of any portions of it requiring action to an appropriate committee."

Mr. Bedford.—I would ask if there is any provision made for a committee on the President's address?

The Secretary.—That can come in as incidental business. The proposed change would work as follows:

At the beginning of the meeting, after the President has taken the chair and a quorum is found to be present, the President appoints a Committee on Credentials, and as soon as the credentials have been handed in, he may read his address. By the time the address has been read, the Committee on Credentials will probably be ready to report. Afterwards the usual order of business, as it has been done for the last few years, will be followed.

Mr. Ebert.—I rise for information only. Should by any means or other, the President be delayed in coming to the opening of the meeting, how could we possibly go on when the By-laws say the President's address shall be read.

The Secretary read Section 1 as follows:

"Promptly, at the time named in the notice issued for the meeting, the President, or in his absence one of the Vice-Presidents, or in their absence a President *pro tempore*, shall officiate."

Mr. Ebert.—*He* will not have an address ready.

The Secretary.—If the address is not here it cannot be read.

Mr. Moore.—The eleventh section says: "The first session shall close with the reading of the President's annual report, and the reference of any portions of it requiring action to an appropriate committee." Suppose the President is not here, shall we wait all night until he comes?

The Secretary—The amendment reads, not that the President shall read it, but that the address shall be read. Of course if there is no address it cannot be read.

Mr. Balluff.—Does it say when the Secretary shall call the roll?

The Secretary.—In the same section.

Mr. Thompson.—I move that the word *shall* be stricken out, and the word *may* inserted.

The amendment offered by Mr. Thompson was accepted by the Business Committee, and the amendment as proposed adopted. Section 11 of Chapter VIII, Article II, was then on motion struck out.

The amendment to Section 7 of the same chapter and article was then called up.

THE SECRETARY.—The section reads now: "The President shall call the roll of colleges and associations represented, requesting each delegation in turn to appoint one member; the persons so selected to act as a committee to nominate officers for the ensuing year." I propose to add thereto, "to nominate officers and the standing committees." The officers are only few in number according to our By-laws, and the standing committees have always been, and it was intended that they should be nominated by the Nominating Committee.

This amendment was likewise adopted.

Mr. G. H. Schaefer offered the following:

MR. SCHAEFER.—Mr. President, this is an association of men and minds that are either too modest in estimating their power to bring about the desired reforms in our profession, or, like large bodies, move slowly but surely. However, inasmuch as our Committee on Legislation, Liquor-dealers' license and Stamp Tax, have accomplished nothing to remedy the evils so flagrant to us all, I offer the following preamble and resolutions:

Whereas (as stated in President Hancock's address), The object of this Association would be materially advanced to have its membership increased, and thus give us a more powerful influence on our legislatures to correct the existing evils of our profession, the odious stamp tax, the liquor-dealers' license libel, the practicing of pharmacy by incompetent persons, the sale of vile and injurious patent medicines, etc.,

Resolved, That the Executive Committee be instructed to have a sufficient number of our Constitution and By-laws, with blank applications for membership, printed and mailed to every druggist and pharmacist in good standing in the United States one month previous to our next annual meeting.

Resolved, That the Committee on Legislation prepare a similar petition to the one partially circulated by the Tennessee Pharmaceutical Association, with a brief and concise statement showing the hardships of those now most prominent legislative evils that hamper our profession, and stigmatize it as retail liquor dealers, and haunt it with espionage on account of stamp tax; and the Executive Committee are to have the same printed in blank form, and to mail same with the Constitution and By-laws, with the request that the druggists to whom same is sent, report to the Chairman of the Legislative Committee the name of the member of Congress or Senator to whom their petition is sent, with such other information as they consider of importance to the Committee on Legislation, who are hereby authorized to make every effort to get a concert of action and bring all the influence to bear at one time, so that the hardships complained of may be finally abated. The Association to defray the expenses of said committee or member whom they may designate to see the work is accomplished at the earliest practicable time.

I believe if we would all put our shoulders to the wheel, we could soon lift ourselves out of this "sea of troubles," and be ready for others we know not of. But there is no denying the fact that our committee to whom we have intrusted this Herculean job, is insufficient for the task, unless we give them our hearty and united assistance. We have for three years heard the answer of "No report," in reply to Secretary's call. It is certainly of sufficient importance to every one of us, to give it our most zealous and united aid.

Mr. Moore.—I have no objection to the spirit of the resolutions. I would like to see each and all of them carried out, but I do not see the practicability of some of the resolutions offered. In the first place the Executive Committee are to send the circulars to the reputable pharmacists. The Executive Committee, I presume, have no more knowledge of the reputable pharmacists of the United States than I have, or any other individual man here, and the only way to accomplish it would be to send these circulars to every individual pharmacist in the United States. And so far as that is concerned, I should most unquestionably object to it. I do not think we have a right to ask a man to become a member of this Association, and refuse him when he accepts our invitation; and there are some men we would be compelled to refuse, so that is not practicable in my estimation. There are other questions spoken of. And as I was on that Committee in regard to Legislation and Stamp Tax, I will state to the Association the troubles which met us. We had a committee appointed, and that committee, or a majority of them, visited the city of Washington, and conferred with the "powers that be" on three or four several occasions. We found that the Commissioner of Internal Revenue had a brother in this profession, and he was very anxious for that brother's morality; the brother at least was anxious; perhaps more so than the Commissioner of Internal Revenue, and he was trying very hard to see how he could get the muss off of him of being a liquor seller, but he could not do it. The committee themselves could not agree in what was wanted. I wanted the sale of whisky limited to legitimate medicinal purposes; another gentleman of the committee, who was a man of as high tone and morality as I am, and who is my peer in everything, said he would not be satisfied unless he could sell whisky by the half-gallon to his neighbors. When the matter came before the committee, they decided at once it was an utter impossibility to allow us to sell liquors in that way unless we were licensed as every other whisky-seller. If we would all turn our faces against the sale of whisky, and against the use of these things, we could accomplish something, but I venture to say there are a hundred members of this Association who are anxious to get rid of the license, but not anxious to get rid of the business, and there is the trouble. That is the reason we have never been and never will be able to accomplish it as long as the government requires a revenue to pay the interest and the debt. Whisky is what they are going to get it on, and if you are to deal in whisky you must pay the tax, and it is nothing more than right you should. In regard to the stamp duty, I have every assurance that almost the first act at the next meeting of Congress will be to repeal the stamp duty, so far as it relates to patent medicines. If they had been certain of the amount of revenue they would have raised, they would have taken it off before, but at the beginning of the last session there was a deficiency, and they began to talk about putting a larger tax on. They have raised a larger revenue than they expected, and there is every probability that before the adjournment of the next Congress this stamp duty will be taken off. Commissioner Douglass has given orders to his subordinates not to enforce the rulings, and that ruling has been sent out to the various men who are now engaged in collecting internal revenue.

Mr. Ebert.—Knowing that this subject would come up, I took particular pains to go to the Collector of Internal Revenue at Chicago, and ask him whether he had received any instructions to modify the rulings of Commissioner Douglass. I went to him personally and he said, "No, sir; we have received no other communications than what are in print;" and he handed me then the rulings of Commissioner Douglass in print, the same as we have seen before. There has been in certain locations in this country, a constant persecution of the pharmacists in regard to this matter of selling citrate of magnesia or seidlitz powders. Men have been fined, and blackmailed by having to pay costs, which are about $22. The commissioner, I believe, gets $7, the attorney $5, and the others divide around, and no man gets off unless he pays $22.

Mr. Schaefer.—I believe if we presented our claims properly to the government we could get some relief. The government has classified us as retail liquor dealers. If we were selling liquor for the purpose of making profit on it it would be all right, but where we are obliged to keep alcohol, and put it in goods, or sell it in small quantities, and are conscientiously particular not to sell it to be misused, I think the government, if the matter was properly presented to them, would classify us on a more honorable basis than retail liquor dealers, and would make a distinction between a retail liquor dealer and a druggist and pharmacist, so the latter would under an ordinary business license be allowed to sell in very small and limited quantities, for the proper purpose, such liquor as would be prescribed by a physician, or that would be properly used for medicine; and on the other hand, those who sell for the purpose of making profit, it would be perfectly right and just, and I would wish them no more than to be classified as retail liquor dealers. We have now for ten years endured this kind of a title, and have had it placed on our walls that we are retail liquor dealers.

People come into our establishments and cannot get it, yet we have to have that license to sell it. In regard to the stamp tax every one knows that there is not a druggist in the land but what every day inadvertently violates the stamp-tax law, and renders himself liable before every session of the grand jury. I say why not have it corrected? This Association is the representative association of the apothecaries in the United States. If it is not large enough let us enlarge it. There are twenty thousand druggists in this country, and there are as many more good men outside of this Association as there are in it. So far as mailing the By-laws and the Constitution, and the blank application is concerned, it is no more of an invitation than I received myself, and if the Association had not seen fit to accept me, it would have been their right to refuse me. As to finding reputable druggists, if we should send to a few that would not be reputable, they probably being aware of their weakness would not send in their application, or would not find two members of the Association that would give them their signatures, or certify to their good standing. It is within our own power to protect ourselves. The proposition includes only a general not a special invitation.

Mr. Bedford.—There are two troubles in regard to this. In the first place many druggists have no conscience in them, and for that reason we have to pay liquor licenses. I have been around the country considerably, down in New England where they are more conscientious than anywhere else, and the liquor dealers of the place are generally pharmacists; they keep drug stores at any rate, and that is the reason the government will not, no matter what influence is brought to bear, let up on the license. So long as there is any revenue to be collected by the government for tax purposes the apothecary has got to pay it every time. I understand the trouble Mr. Schaefer complains of; he has some conscience in the matter, but the innocent have to suffer for the guilty; and the trouble is, there are too many guilty ones. We cannot help it, and all our complaining and growling is of no earthly use. You may make all the committees you like, and bring all the influence you choose to bear on the subject, but it will never have any result. The government will have the revenue from the whisky sales, and as long as there are whisky sales from which the government must derive revenue the druggist must pay his portion. We all know that many druggists throughout the country sell liquor, in any desired quantity, to anybody who asks for it. I have been in stores belonging to members of this Association, where in a little room off of the store you will find a row of kegs, and any customer that comes into the store can get a glass of anything he chooses. He does not ask for it; he goes in and draws it, and pays his money for it; and that in stores belonging to members of this Association who come to these meetings.

Mr. Colcord.—What part of the country is that?

Mr. Bedford.—It is in New England. And they are good men and conscientious men in their way too. It seems to me we are wasting time, and I do not want to say anything more on that subject. I am a teetotaler myself, opposed in every sense of the word to selling it, and I can conscientiously say I never sold intentionally a bit of liquor as long as I was in business for myself to get drunk on. I never sold over half a pint to anybody, and if they came half a dozen times they did not get it. Just so long as whisky is sold for medicinal purposes, and the government collects a revenue, the government will have it from every apothecary. Regarding an increase of members, I have talked with members of the Executive Committee about more extended invitations to become members of the Association, and whether we should not issue a circular. The members of the committee have thought it was not advisable, and thinking the matter over I am of the same opinion. I do not want to brag of what I do or anybody else does; but I say if we want this Association to increase, Professor Maisch always has blank forms of application, and if every member will propose but one person, we will see our Association doubled. There are on the records of the Association now the names of one hundred members I have proposed for membership of this Association. Why? Because I sought to do it. Because I knew they were good men, and they would be benefited by being in the Association. There has not been a time that I have not proposed at a meeting from five to fifteen names for membership, and that is what every member can do if he will choose to.

Mr. Moore.—I wish to state that in conversation with the chairman of the Committee on Ways and Means, Mr. Dawes, I proposed to him he should take off the liquor-dealers' license, and relieve us from the odium of being liquor dealers, and that he should place the tax upon us as pharmacists. His reply was, "My dear fellow, every rum-seller in Massachusetts will put a red, white, and blue bottle in his window and be an apothecary." I believe that is so. I saw at once the thing was impossible as long as the pharmacists themselves were anxious to become liquor dealers. The fault is not with the government; it is with ourselves. We are anxious to make a profit on selling whisky.

Mr. Schaefer.—We are not anxious to make a profit by selling whisky as pharmacists. I think as a body we are not.

Mr. Colcord.—Who do you mean by *we?*

Mr. Schaefer.—I think the majority of conscientious druggists in this country, the men that should have the name of pharmacist on their sign, not the men that would put up a few colored bottles and sell different colored liquors under different titles. I would not have presented that card to this Association, if I thought it was otherwise than what I have said. Professor Moore says Mr. Dawes could not define the difference between the pharmacist and the man that sold liquor under that name. This government can inflict penalties enough to make us conscientious if we neglect to put on such a small thing as a one-cent stamp, and if the law was made so strong that a man selling drugs, and having the title of pharmacist, has permission to sell one-half pint for legitimate purposes, and when violating that, is subject to a penalty of so much for the first offence and so much for the second, we should have no trouble.

Mr. Judge.—What is to be the purpose; who is to discriminate?

Mr. Schaefer.—That would be as to the amount of whisky they sell.

Mr. Thompson.—There seems to be a misapprehension as to what the Commissioner construes to be the law as to the meaning of liquor dealers. I ask whether the mere selling of alcohol by a druggist constitutes a liquor dealer within the meaning of the law?

Mr. Moore.—You cannot sell alcohol without taking out a license; or any of the medicated bitters that are so little bitter that they can be used as a beverage, without taking out a license. Drake's bitters and Hostetter's bitters you cannot sell without a license.

The Secretary.—I ask permission to make a few remarks, not on those points that have been spoken about, but on that point in the preamble and resolution which might be construed into meaning that our committees have not done any work; particularly the Committee on Infringement of Stamp Tax and on Liquor-dealers' License. My position as Secretary has brought me frequently into contact with them, and although those committees have not reported in writing, they frequently have conversed with the Secretary, and have always, to the best of my knowledge, been ready to go to Washington at their own expense to speak for the interests of pharmacy.

MR. SCHAEFER.—I would say in explanation, that those resolutions do not mean to infer that the committee did not do all that they could, but that they were unable, not having sufficient assistance and backing to accomplish what they were requested to do.

The question being taken the resolution was lost.

The Business Committee proposed, after having consulted the Treasurer, that the salary of the reporter for the coming year be fixed at $500, which was agreed to.

Mr. Bedford proposed that the Treasurer be authorized to pay the expenses of standing committees, provided the sums do not exceed $25 for each committee. In the discussion which followed, it was stated that such a resolution would prevent the publication and distribution of the Proceedings under the direction of the Executive Committee; also that special appropriations could be made for the necessary expenses incurred by any committee. The resolution was then withdrawn, and on motion of Mr. Wright, the Chairman of the last Committee on the Drug Market was invited to bring in his bill of expenses.

The report on the Progress of Pharmacy was called up.

MR. DIEHL.—I am in the unpleasant position of appearing before you with an unfinished report. I have been unable for the last two months to work on it on account of my private business affairs; but it is so far finished that that portion of the report on pharmacy will be in the Secretary's hands in two weeks, and I think the entire report will be finished by the first of next month. I aimed to have the introductory part complete for this meeting, but my appointment to the presidency has prevented me from doing any further work on it, and I have therefore to take it just as I had prepared it ready for copying, and pick out portions of subjects which I think will be of interest to be read to the meeting. I intend in the new report to have instead of the usual prefatory remarks, which will only embrace such subjects as I wish particularly to call attention to, to have a section on general subjects. These subjects are to embrace matters that are of general import, and cannot be well classified with the balance of the report, and such particular subjects as I would like to draw special attention to. Quite a number of papers have appeared in the journals upon the status of modern pharmacy. The status of pharmacy in Europe, according to all the papers that have been written the last year or so, seems to be rather lower than it has been heretofore. It is becoming lower from year to year. They attribute the retrogression of pharmacy to the innovation of elegant pharmacy, and the numerous manufacturers of pharmaceutical products that spring up every year.

After referring to Dr. Hoffmann's essay on the Problems of Pharmacy, published in the *American Journal of Pharmacy*, to the papers of Mr. Danckwortt of Magdeburg, and Prof. Hlasiwetz of Vienna, and to editorial articles which have appeared in the *London Pharmaceutical Journal*, Mr. Diehl read abstracts from his report, which was, on motion, accepted and referred.

The following report was then read and referred.

The Committee upon the Photographic Album would respectfully report, that during the year they have received about thirty photographs, which have been placed in the Album, and they may be found on the table in the exhibition-room, as also the Album presented by the British Pharmaceutical Conference.

P. W. Bedford,
Chairman.

On motion, the Association adjourned until 9 o'clock Friday morning.

Sixth Session.—Friday Morning, September 11th.

The Association was called to order by President Diehl.

The minutes of the fifth session were read and approved.

Mr. Remington read a letter from Mr. L. M. Royce, in relation to Query 46, as follows:

New York, September 4th, 1874.

In reply to Query No. 46, which was continued to me at the last annual meeting, I would say I had intended to procure specimens from different parts of the country in order to show the quality of taraxacum in the different markets, but the duties of active business have prevented me from carrying out my intention. I can only speak of the market of New York, and the facts which I have collected are not sufficient for a paper.

As the result of my investigations I am convinced that chicory is largely sold as a *substitute* for taraxacum, but that it is seldom used as an *adulterant*.

It is preferred by many retailers on account of its finer appearance. Instances have come within my own knowledge where the genuine taraxacum has been returned to the wholesaler with the request to send the lighter colored root, *i. e.*, chicory.

I am credibly informed that one of the oldest and most respected makers of fluid extracts uses chicory in preparing fluid extract of taraxacum. While there can be no doubt of the fact that chicory is largely sold as taraxacum, yet the difference in appearance between the two roots is sufficient to enable any pharmacist to readily distinguish them, and if a little care is taken the true taraxacum may always be obtained from the wholesale dealer.

The above is all that I have to offer in answer to the query.

Regretting that business prevents me from being present at Louisville,

I am, etc.,

L. M. ROYCE.

A letter from Mr. Heydenreich was read, stating that his answer to Query 21, relative to Pancreatin, was almost ready; the subject was, on motion, referred to the Committee on Papers and Queries.

On motion of the Secretary all previous queries, not otherwise disposed of, were ordered to be dropped. This action affects the following queries of the previous year's list:

No. 2. On the presence of Silver and Arsenic in Commercial Bismuth preparations.

No. 3. On the solubility of Sulphate of Morphia in water.

No. 6. On Bromo-Chloralum.

No. 14. On the use of Gum Arabic in emulsions.

No. 18. On the action of Nitric Acid upon Tincture of Gelsemium.

No. 24. On the quality of Commercial Benzoin.

No. 25. On the constituents of the Juice of the Root and of the Flower-stems of Taraxacum Dens-Leonis.

No. 27. On the medical effects of the Ergots from Grasses, Barley, Wheat, Oats, etc.

No. 45. On the value of Orange-Colored Glass for preventing the Chemical Action of Light on Volatile Oils.

No. 49. On the quality of Commercial Subnitrate and Subcarbonate of Bismuth.

No. 50. On the quality of Burnt Alum of Commerce.

Mr. Remington read an elaborate paper on the Officinal Veratrums, written by Mr. Charles L. Mitchell, which, on motion, was referred for publication (see page 397).

MR. MAISCH.—In regard to the subject-matter of the paper just read, it may be stated that the two plants, Veratrum album and Veratrum viride, are botanically so nearly alike that they are by some botanists considered as mere varieties of each other. The rhizomes of the two plants are likewise so nearly alike in appearance, even under the microscope, that they can scarcely be distinguished. From these facts I derived the idea some years ago, that the two rhizomes had likewise the same chemical constituents. In some correspondence with Professor Dragendorff, of Dorpat, Russia, I mentioned that fact, and that I doubted, for various reasons, the existence of the alkaloid veratria in Veratrum album. Professor Dragendorff wrote me that he found Veratrum album to contain jervia, and besides that another alkaloid, which was not veratria. Subsequently he examined some Veratrum viride which I sent him, and he stated that his results were similar to those previously obtained by Mr. Bullock. I am not aware that his examination has ever been published; but he had the same subject in hand, and I think his observations will prove the correctness of Mr. Mitchell's results, viz., that the constituents of the two rhizomes are qualitatively nearly alike, although most probably not in quantity.

The Liederkranz Society of Louisville extended an invitation to the members of the Association and their ladies, to attend a promenade concert, to be given this evening at 8 o'clock, at Woodland Garden, on Market Street, near the terminus of the City Railroad. It was accepted with thanks.

The Chair appointed the following committee on the Liebig Memorial: Messrs. Paul Balluff of New York, John F. Hancock of Baltimore, and Albert E. Ebert of Chicago.

A volunteer paper by Mr. James R. Mercein, of Jersey City, on Home-made Chemicals, was read and referred (see page 427).

MR. MAISCH.—I am glad we have such a paper, and hope we may get many more like it; practical papers that are of use in the every-day duties in the shop. Much money may be saved, I am fully persuaded, by following the course pointed out by Mr Mercein, and what is even worth a great deal more than that, much information can thus be imparted to the students and apprentices which would otherwise be lost to them.

Mr. Remington read a paper by Mr. I. B. Patten, entitled the Name Apothecary, etc. (see page 343), which was referred.

Dr. Pile read a paper on Bromide of Ammonium (see page 434), and in answer to a question, stated that thus prepared it was free from bromate.

The same gentleman also read a paper on Hydrometers for special purposes (see page 366), illustrating his remarks by experiments; also a short paper on Phosphuretted Resin (see page 376), all being referred to the Executive Committee.

MR. MAISCH.—It may be mentioned that lately a writer in the Druggists' Circular has proposed to substitute wax for the resin. His argument is that wax can be more readily made into pills. Phosphorus is said to dissolve very easily in the wax, and at ordinary temperature this remains softer than resin. Some years ago cacao butter was recommended for similar purposes, and tolu was proposed in England several months ago.

Dr. Pile.—I think the objection to tolu was that in warm weather it always becomes very soft. This phosphuretted resin keeps brittle, and can be rubbed into powder without any trouble. Besides that, the resin is free from water, which is an objectionable feature, when combining phosphorus with tolu.

Mr. Hancock.—I have used cacao butter, and found it to answer well as a means of dividing phosphorus; it makes very nice pills, which on rotating them in tincture of tolu, and then in sugar, are thus covered, preserving the cacao butter.

Mr. Saunders.—I should like to inquire how a uniform consistence is obtained in hot weather?

Mr. Hancock.—I have not had trouble in that.

Mr. Remington.—I would like to ask Mr. Hancock whether he made phosphuretted cacao butter very strong, as in the case of phosphuretted resin, so it can be diluted when it is made up into pills? Mr. Gerrard's formula contains 4 per cent. of phosphorus.

Mr. Hancock.—I have made a preparation with the cacao butter corresponding in strength to this resin, but never had occasion to use it. I have made up prescriptions, however, in which phosphorus had been ordered, using the cacao butter as the base.

The subject of so-called American opium was then introduced.

Mr. Ebert.—During the last six or eight years we have had occasional allusions to opium grown in this country, and about a year ago I had my attention called to the fact that a certain party was selling American opium throughout the Northwest. Somewhat later I received the following letter:

Oshkosh, Wis., November 5th, 1873.

Mr Albert E. Ebert.

Dear Sir: By to-day's mail I send you a specimen of opium, which a gentleman, claiming to be Welcome C. Wilson, of Liberty, Wis., and formerly of Vermont, is selling. He called on me with a number of pounds, and states that he is selling large quantities to druggists and doctors over the country; claims it to be equal to the average imported, or rather superior. I bought a very small quantity for the purpose of satisfying myself of its character, but have been unable to obtain any morphia from it by the process of the U. S. Dispensatory.

Yours truly,
F. R. Guiteau.

I at once answered this letter, and requested the gentleman for further details in regard to the opium and in regard to the party who sold it to him, and this is his answer:

OSHKOSH, WIS., November 8th, 1873.

DEAR SIR: Your favor of the 6th was received. Mr. W. C. Wilson claims to be the person spoken of in the Dispensatory of 1872, in the article on opium, as living in Addison County, Vermont, and of whom Professor Procter reports in the American Journal of Pharmacy of 1868, page 513. I do not remember of his mentioning Rosengarten especially, though he states he has sold a great deal of the stuff to the druggists in New York, Cincinnati, and in towns of this State. He refers to Professor Procter's report as proof of the quality of the drug, and also claims that Dr. Squibb, of Brooklyn, said if the tariff was raised to the figure levied during the war, such opium as his would drive the foreign from the market. He gives Liberty, Wis., as his residence and post-office address. He said he raised the poppies himself with the help of his sons in this State. I understood it to be a juice of the plant and capsules, but may be mistaken. He speaks of his travels in Turkey. He claims his opium will average as much as 8 per cent. of morphia. He asks eight dollars a pound for it. I told him I would take a small piece for the purpose of testing it, and he expressed a desire to sell me more after I had done so to my satisfaction. Speaks of sales of many pounds to some druggists.

Yours, very truly,
F. R. GUITEAU.

I had previously called his attention to this paper, that had appeared in the American Journal of Pharmacy on that subject, and asked him if this was the same person. To get at the matter farther, I made inquiries as time permitted, and as I came into contact with parties from that State, I found a number who had met the man, or on whom he had called, and among them was a party from the city of Milwaukee, who had purchased some. This sample (exhibited here) was sent to me by this gentleman from Milwaukee. The other sample I received from the gentleman who had first written to me. Both samples were examined by me. I also spoke to Mr. Mattison, who is present with us, who was going over that section of the country, to make some investigations; and in a letter received from him he makes the following statement:

OSHKOSH, WIS., 8th month 13th, 1874.

A few months ago Mr. Wilson visited Milwaukee, Fond Du Lac, Oshkosh, etc., selling American opium. He told a druggist that he was *strapped*, and he would sell him a pound for three dollars. This the druggist, Mr. P. A. Griffiths, gave him, or rather, I believe, he borrowed three dollars, and left one pound as security until his return, which never came around. The lump which he left as above is rolled up much like Smyrna opium, covered with the leaves and seed capsules of a species of Rumex. It is quite hard, at least much harder than any I ever saw of his make. He offers it as Ohio, Illinois, or Wisconsin opium, and tells his victims that he cultivates the *Papaver somniferum* upon the banks of the Kickapoo River, or at Sparta, or Beloit, or Liberty, whichever suits his convenience. When druggists remonstrate on the smell differing from opium, he says, "Yes, this would smell that way if I would mix it with cowdung, but I suppose you would rather pay a dollar a pound duty on cowdung from Smyrna, than buy pure American stock." He is a tall man, black eyes and gray hair, and carries a carpet bag full of it with him. Represents himself as having travelled extensively in Europe. With one druggist here he offered to *trade it out* with him. . . . .

Faithfully,
Rich. V. Mattison.

This seems to be the same party who imposed upon Professor Procter during the year 1868, as stated in Prof. Procter's note on American opium from Vermont, an outline of which I have made from the American Journal of Pharmacy, thinking it would be interesting to the members, as it very fully establishes the man's doings.

" Mr. C. Wilson, from Monkton, Addison County, Vermont, had called his attention to a sample of opium which he desired to have examined, Mr. Wilson stating that it had been produced in the neighborhood of Monkton, Vermont, that he had been engaged in the culture a number of years, and that the yield was quite lucrative. After the weather was settled in the spring, the seed of the opium poppy was sown in ground prepared as for a garden, in which the plants grew vigorously, and about the 1st of September the whole plants were gathered and subjected to the action of alcohol to prevent fermentation, and then subjected to strong pressure. The juice thus obtained was evaporated to an extract incorporated with the inspissated juice of the capsule, so that when finished the whole constituted a soft mass of pilular consistence, and nearly homogeneous texture except a few fragments of vegetable tissue, it possessing a strong narcotic odor, almost precisely that of good ordinary opium, but not so decided, and a uniform dark color. Its reaction is acid. This year, 1868, Mr. Wilson obtained 640 pounds, about 100 pounds to the acre, which he had sold for from eight to ten dollars a pound to druggists and physicians in New England. Prof. Procter subjected a sample of this opium to a quantitative examination, and he found that it contained 6.25 per cent. of morphia in a moist state, or 7.44 per cent., if the opium were in a dry state." Prof. Procter was so well impressed with the honesty of the sample given him that he goes on to give him the following good advertisement: " The maker appears to be entirely candid and honest in his conduct of the process, and the fault is not knowing the real character of the substance he is dealing with." In the January number of the American Journal of Pharmacy for 1869, page 23, Prof. Procter has the following additional note on this American opium from Vermont: "Since our last article on this subject, we have received further information and several other samples of the opium obtained and assayed, and a further conversation had with Mr. Wilson, which has caused the writer to change his opinion of the value of this American opium which he formed from the first sample assayed."

Mr. Wilson had brought six pounds to Messrs. Rosengarten & Sons, who had purchased it on the strength of the published assay of Prof. Procter, and had found that on subjecting it to a process for morphia, none was obtained. They at once called upon Prof. Procter, who found that it had the same general appearance, but the odor varied somewhat, being less decidedly that of Turkey opium than the first sample obtained from Mr. Wilson, and by him examined. Prof. Procter subjected the samples from Messrs. Rosengarten & Sons to an examination, as he says, with great care, and found that instead of containing 6.25 per cent., they only contained nine-tenths of one per cent., and one sample not a trace of morphia. He therefore concluded that Mr. Wilson's process must be very defective in producing opium, or the original sample submitted was not an honest representative of the article manufactured by him, and was calculated to deceive. Again Prof. Procter calls attention in the American Journal of Pharmacy, January, 1870, page 68, to the so-called opium from Illinois. "This opium was deposited by Dr. D. G. Plummer in the exhibition of drugs in the Chicago meeting of the American Pharmaceutical Association in 1869, and was informed that the same had been made by Wilson's process, etc." On testing it, he found it contained no more than one-fifth of one per cent. of morphia, and was therefore worthless.

Two hundred grains of this Wisconsin opium were subjected to an examination, all dissolving but 10 per cent., but yielding not a trace of morphia or any other alkaloid, or even a trace of meconic acid. I came to the conclusion, after the man's statement in regard to growing it in many different places, that it was not the extract of poppy, but it might possibly be extract of lettuce; and in comparing it with this extract, I found in its general characters, in solubility and general deportment, it is similar to extract of lettuce. I hope that something can be done which will give it sufficient publicity, so that the profession may not be further imposed upon by this fellow, who seems to make it a regular business to impose upon the physician and druggist. He imposed upon Prof. Procter and Dr. Squibb, and whenever a druggist seems to object to it, he at once alludes to this fact, naturally not alluding to the examination that Prof. Procter made afterwards. He cites Dr. Squibb and Prof. Procter as having examined it, and having found it of much value, and in that way he does impose upon a certain class of physicians and druggists. I do not know of any better way than to bring it before the Association. There are other gentlemen here who have met the man; I personally have never seen him.

Mr. Hancock.—I am glad to see such parties exposed. I am inclined to believe that apothecaries are often imposed upon because of the use of names of men of eminence in our profession. I know within the last year that parties have come around selling goods, and they have succeeded in introducing their articles into stores on that basis, representing that this man and the other, who were very prominent in the trade in different parts of the country, were using their goods.

Mr. Mattison.—The sample of extract of opium here is very different from what I saw in Wisconsin at the store of V. A. Griffiths. That was in a lump very much resembling the imported opium, and covered with the seed capsules and leaves, which made it look similar, and the consistency was about the same as opium after it has been imported some time and lost the water. It was quite hard, and bore a very good resemblance. I made many inquiries through Iowa, Wisconsin, and Nebraska, and found in some portions of Iowa he had been circulating around with his opium. He usually carries it in a carpet satchel holding twenty-five or thirty pounds. In Nebraska I was not able to find any one who had bought any, or who had seen the man, but I found, also, an evident disinclination to talk about the sale of the opium. They all thought some one else might have bought it, but they had not, although in several stores I found samples. In Omaha nobody seemed to know anything about him. I think the physicians have been very much more victimized than the druggists in regard to this, as he offers it sometimes a dollar a pound less than the market price, and he not only goes to the druggists, but to the physicians; and so far as I could learn, several druggists and physicians had bought this opium.

Mr. Remington.—I had the pleasure of seeing this man some years ago. I was one morning very early engaged at the laboratory of Dr. Squibb. It was about five o'clock in the morning. There was a loud rattling at the big iron gate, and one of the men went down, and there was this lean, long-haired gentleman from Vermont with a satchel in his hand and some packages, which he said were opium done up in tin-foil. He said he wanted to see Dr. Squibb, to whom he had a very interesting story to tell about his opium. The Doctor said he would like to see it and have a sample for examination. The sample turned out pretty well, and on the strength of this examination some of the opium was bought; my impression is about ten pounds. Then Dr. Squibb sent to Prof. Procter part of the sample he had, and that I think is the one on which Prof. Procter's paper was written, giving the first information about it. Subsequently this made-up opium was circulated around, and that second lot, that ten pounds, which only contained nine-tenths of one per cent, I think was really the extract of poppy; that is, instead of incising the capsule and taking off the milk juice, he made it on a larger scale, throwing the whole plant into a pot and boiling it with water. He let this out himself. He said he spread it on broken glass and old plates, and mixed it all before sending it into the market. There was another little interesting incident which rather opened the eyes of Dr. Squibb. After he left, his nephew, who was travelling with him, came into the office of the laboratory, said he was a stranger, he had lost his uncle and did not know where to find him or what to do. His uncle had the funds and he had had no breakfast. And the Doctor gave him some funds to get some breakfast. The man evidently is a swindler all the way through. We did not expect he would ever turn up again, but he seems to have got out into the Western country, and I think the members are doing a good service in exposing him.

Mr. Mattison.—I have never seen this individual, but the description given by the druggists of Wisconsin tallies with the description of Mr. Remington. I tried hard to get that specimen of opium to exhibit at this meeting, but Mr. Griffiths declined to part with it. He wanted to keep it for a keepsake.

Mr. Ebert.—This sample I have came from Milwaukee, and it was taken from the inside of the lump. I mentioned to the gentleman when I saw him, I feared there might have been some opium externally placed on the lump, and I didn't wish to have him send me that, so I said, "Cut the lump and give me some from the inside." He put it into this jar, and I have had it some three or four months on hand, and through the hot weather it has commenced to get very soft, much softer than it was at first. The first sample I received was just as Mr. Mattison described it. It was quite hard, and reminded me more of very hard dried-up extract. And another sample I saw subsequently, of which I only obtained about an ounce, was similar. It seemed to have been wrapped up in some large leaf.

Mr. Saunders.—I think this man's success is due to the fact, that formerly there was a good deal of smuggling of opium through Canada into the United States, and many of these peddlers would carry around samples of opium in that way that they could get over free from duty, and druggists being able to buy them a little cheaper, have been more readily imposed upon by a matter of this sort than they would be otherwise.

Mr. Mattison.—He refers to Dr. Squibb very freely, and he furthermore states that Dr. Squibb, the last time he saw him, told him our government should make public recognition of his valuable services in raising opium in this country and showing it could be done successfully, and he had no doubt the time would arrive when it would be done. I think this Association has taken it in hand instead of the government.

Mr. Remington.—I think this is a very useful step in the right direction,—the exposure of fraud. I therefore move that the thanks of the Association be tendered to Mr. Ebert and Mr. Mattison for their concerted action in this respect.

The motion of thanks being duly seconded, was carried.

Mr. Fehr.—There is another thing I should like to have exposed,—citrate of magnesia which does not contain either citric acid or magnesia.

Mr. Remington.—I think that will be found in every city in the United States. I suppose you refer to the substitution of tartrate of sodium. That comes up every year, and I do not see that anything can be done in the matter. Mr. Markoe showed up the matter two or three years ago. It is an unfortunate fact that that is done very largely.

Mr. Hancock, from the Committee on Unofficinal Formulas, made a report, which was accepted and referred (see page 338).

Mr. Ebert.—In addition to this report I desire to present to the Association a paper on elixirs, sent by the Chicago College of Pharmacy. In regard to the elixirs of the American Pharmaceutical Association that were adopted last year, much complaint has been made against them; of their impracticability for use. The Chicago College of Pharmacy directed the committee to get up a set of formulas for use, somewhat based upon the formulas of Prof. Diehl, of Louisville, and submit them to the college; these are now submitted to the American Pharmaceutical Association for their adoption or revision, as they may see fit. The subject of elixirs would give too large a scope for discussion, and we would not come to any good result by it, and I hope that this may be referred to a committee, who could report to the Secretary a set of formulas previous to going into publication. Something of that character being done would I think help the matter somewhat.

Mr. Peixotto.—In connection with that I offer these resolutions.

Resolved, That a committee of three be appointed, to whom shall be referred the formulas of elixirs presented by the Chicago College of Pharmacy; said committee to examine all formulas, to carefully compare them with the formulas adopted at the last annual meeting; to modify any or all formulas if necessary, and to report to the Permanent Secretary in time for the publication of the Proceedings.

Resolved, That the formulas thus recommended shall be considered the formulas for elixirs of the American Pharmaceutical Association.

Resolved, That the Permanent Secretary be directed to notify any changes to the different pharmaceutical and medical journals and societies.

Mr. Hancock.—I should like to ask if these formulas are sincere in their names; whether the name indicates the preparation. That is one of the features of the elixir business I seriously object to. When you call an elixir by a certain name, let that name signify its composition as near as possible.

Mr. Ebert.—We do not wish to establish a Pharmacopœia in this elixir business. We simply wish to have formulas by which we can make similar preparations to those that are in the market. Godfrey's cordial is undoubtedly a very inappropriate name for that mixture. But when we get the formula it makes no difference what we call it, so long as it answers the purpose. Making a fine point about the nomenclature of these elixirs is carrying it too far. What we want is a representation of the elixirs in the market, but don't let us stand on terms and thereby make contentions which are of no practical purpose. That is the way I look at it. Whoever wishes to criticize such nostrums is welcome to do it.

Mr. Hancock.—I think the name should represent the trade articles, and not let this Association prostitute itself to the level of the parties who give insincere names, and resort to every trick to get trade for their preparations. I am opposed to that as a member of the Association.

Mr. Roberts.—The resolution of Mr. Peixotto is under consideration. That resolution I think embraces the idea of giving to the committee which it proposes to appoint, the power to decide for the Association as to whether these shall be the standard elixirs of the Association or not. I think that would be only an expression of the committee. It would be better to so modify the motion as to have the committee report at our next annual meeting, and then let the Association act upon what the committee has done. They can make a report, bringing samples. The committee might do what would be very acceptable or might do that which was not acceptable. Therefore I should offer as an amendment, that the resolution be so far modified as to cause the committee to report at our next annual meeting.

Mr. Ebert.—I will make this objection to that. Last year a committee on unofficinal formulas brought us a set of elixirs, and we were then just as well qualified to judge of the practicability of these elixirs as we will be one year hence. We can come and see the samples and listen to the formulas, but there is not a member of this Association that could carry the connections of this nostrum business in his memory. We have adopted a set of elixirs and there is another set of formulas presented here. Let them be presented to a committee of three, to be elected in one city if you will have it so, and to work this matter up in time for publication, and I really believe we will get a better set of formulas than if we wait one whole year and let this matter go on as it has been going. If we do this we shall know no more next year than we know now. I think the groundwork of these formulas is here, and with the formulas that we have, and those of Prof. Diehl, we can certainly choose some simple formulas for our use.

Mr. Moore.—The trouble in regard to the elixir formulas for the last year was, they were presented without being referred to a committee, or without the convention knowing what they were except by the samples. They were adopted and the Secretary ordered to spread them before the country. That is not the plan to pursue in regard to any man's elixirs, and if you are going to appoint a committee to take up this subject, I do not see why you should confine them to the Chicago elixirs, and the elixirs reported by the committee. If a committee is appointed under the resolution they cannot consider Prof. Diehl's elixirs.

The Secretary.—The resolution reads, "To modify any or all formulas if necessary."

Mr. Moore.—They are to consider the formulas of the Chicago College.

The Secretary.—They are to modify any or all formulas.

Mr. Moore.—Of the two sets; not Professor Diehl's.

The Secretary.—Striking out a formula and putting in another I think is a modification.

Mr. Moore.—They are to modify *these* formulas. They are the base upon which they are to work. They should have access to any formula that is presented, and then modify all and present the formulas here. If this committee is to report before the Proceedings are published, we will get the Proceedings, if the Secretary has to wait, somewhere about our next meeting. I am opposed to this matter of keeping the Transactions waiting for papers and business to be finished. All business should be finished at this meeting and handed to the Secretary so he can publish his work. The trouble and delay in our Proceedings is on account of our permitting unfinished papers to be accepted, and then waiting for the authors to finish them. I know if you adopt this resolution it will be a month before they begin to work on the elixir business.

Mr. Ebert.—To hurry this thing along, three gentlemen in the city, where the Secretary also resides, have agreed to take it up and finish it at once.

Mr. Moore.—Then they are to be Philadelphia elixirs.

Mr. Ebert.—They will be Chicago elixirs.

Mr. Moore.—Indorsed by Philadelphia.

Mr. Roberts.—The difference between Mr. Ebert and myself seems to be he wants the committee to do the work and give the sanction of the Association to these elixirs. I want the committee to do the work because a few men can work to better advantage in a matter of this kind than many, but I wish them to submit their work to the Association for the Association's approval or not, just as it might see fit. I do not wish them to speak in the name of the Association.

Mr. Hancock.—This elixir report last year of course was not full, and it was not intended to be full, because the disposition has been to break up and kill that fraud if possible. But the objection to the elixirs that were furnished at that time is that they do not represent the articles that are called by the same name as the articles furnished by some manufacturers. Take the elixir of cinchona and iron, for instance, which is objected to because its name represents the formula. In the discussion of a paper read by Dr. De Vrij before the British Pharmaceutical Conference, he stated that the cinchotannic acid was an important constituent in combination with the alkaloids of cinchona. If you are going to sacrifice the quality of a preparation for its appearance, I don't think this Association is taking the proper stand. It is descending to the level of those who cater to the delicate palate of patients and physicians. Like Mr. Roberts, I am opposed to referring this to a committee for their final action. Let us wait another year, and let them report to the next meeting of this Association.

The question being taken on the amendment offered by Mr. Roberts, that the committee be directed to report at the next annual meeting, it was carried by a vote of 31 ayes against 9 nays.

Mr. Moore moved to amend by inserting after the words "adopted at the last annual meeting," the words "or which may be submitted to them." This was agreed to, and the motion as amended was placed before the meeting as follows:

Resolved, That a committee of three be appointed, to whom shall be referred the formulas of elixirs presented by the Chicago College of Pharmacy, said committee to examine the formulas and carefully compare them with the formulas adopted at the last annual meeting, or which may be submitted to them, to modify any or all formulas if necessary, and to report to the next annual meeting.

Mr. Thompson.—I move that the formulas submitted by the Chicago College of Pharmacy be published in our Proceedings. I want them to be published so every member may know what they are.

Mr. Hancock.—I oppose that motion. I think we do not want such a collection of formulas in the Proceedings. Let the Chicago College, the Chicago *Pharmacist*, or the other journals publish them, and the formulas will be in the hands of every member previous to the next meeting. Then if any gentleman should wish to object to any one of them he can do it.

Mr. Ebert.—I do not see any use of publishing these formulas and advertising more of this nostrum question. I hope the committee will settle the question for us altogether. I hope the different colleges will send in reports, submit them to the committee, and let them select the best for us.

Mr. Thompson.—We have one report which does not seem to be satisfactory.

Mr. Ebert.—Because you allowed one man to do the work.

Mr. Roberts.—I object to the publication on the ground that this gives the official sanction of this Association to these elixirs. As the matter is now in the hands of the committee, we will make a mistake to order the publication of the formulas, which would be considered nothing more nor less than an indorsement.

Mr. Colcord —I do not think this Association wants any elixirs. If Chicago, Philadelphia, or any other city wants a set of elixirs, let them publish formulas, but I do not think the Association wants any. I am perfectly willing they should be published, but not as belonging to this Association.

Mr. Roberts.—The idea, as I understand it, of having a set of elixirs indorsed by the Association is, that in the several cities we may have elixirs of uniform composition, so that if an elixir of bark and iron is prescribed in Philadelphia, the same preparation would be dispensed as in Chicago. The adoption by the Association will have the effect of making the elixirs of general acceptation.

Mr. Thompson.—I would like to give the reasons which induced me to make that motion. No matter what set of formulas this Association may adopt no member will be bound by these formulas. He will select for himself, and use those which meet his judgment and the views of his customers. This elixir business is nothing at best but an attempt to cater to the taste of the patient, and afford the physician a method of prescribing pleasant medicines, whether they are remedies or not. I do not know that the formulas submitted by the Chicago College are worth anything. I think we ought to have the benefit of them, but I am opposed to this Association binding itself by any set of formulas; we can never keep up with them. As soon as we have an elixir of cinchona and iron, they will have cinchona, iron, and strychnia; and they will keep on until we have elixirs containing everything in the list of Materia Medica.

Mr. Colcord.—The objection I make to this is, that it makes one more class of patent medicines; there are enough now. You cannot make a class of patent medicines that will come in and supplant the place of the present lot of medicines you have in the market. If we could I would acquiesce, but as long as Donald Kennedy is, every summer, discovering new leaves we would have to have a new class. You would want a class of sugar-coated and of gelatin pills, and so on. If the Chicago College have adopted a set of formulas, publish them for what they are worth, but do not let us adopt them.

Mr. Balluff.—I object to the publication of the Chicago formulas. I think the less we say in our Proceedings about elixirs the better, and I think it is enough if we publish those which will be presented and adopted by the Convention next year.

Mr. Hancock.—At best the publication of formulas for elixirs is simply an allopathic pharmacopœia for homœopathic medicines. These preparations treat those cases that are not actually diseases. In dealing with this matter

I think the Association should deal with it in an honorable, upright way, and while I recognize the importance of giving a line of formulas for elixirs, I think we should restrict them as much as possible, and if a preparation in its name does not indicate anything but fraud, we should not take any notice of it at all. We should confine this to those formulas that seem to indicate good preparations, and it would be proper, for the satisfaction of the medical profession, to recognize their merits, to publish such formulas in our Proceedings, and to adopt them. If we simply publish them, it does not amount to anything at all. There is a great confusion on this subject already, and the physician is more confused than we are. They do not know the difference between the consistent and inconsistent preparations; that is the reason the report last year was not of more use; because in commerce there are so many preparations that are of no account, with names that signify nothing, and you can see on their face they are not what they represent. You can get a list of formulas that is complete in itself, and that will furnish excellent preparations that are useful to the physician in the treatment of disease, but their reputation will be interfered with by the travelling agents of the various houses. They will pick some flaw in the best formula for an elixir that can be devised, and show that there is, by some nice manipulation, or some peculiar knowledge that they have gained from their experience, something which renders their special preparation superior to that adopted by the Association, so that all we can do is to regulate, in a properly restrictive measure, this elixir business.

The resolution to publish the formulas presented by the Chicago College of Pharmacy, which was offered by Mr. Thompson, was lost.

Mr. Diehl then rose to make an explanation and correction of some remarks made by him at the meeting in 1871.

MR. DIEHL.—At the meeting in St. Louis in 1871 I had the honor to read a paper upon a new apparatus for making liquor ammoniæ, and at the close of the paper I made some remarks, which I will now read with a view of making an explanation.

"Shortly after the closing of the World's Exposition at Paris, the precise time I do not recollect, a member of the commission sent to represent our government, to whom I had been obligated for many courtesies that I remember with gratitude, solicited a working drawing of the apparatus above described, together with the details of its employment. I was pleased to be, in a small measure, permitted to make a return for the courtesies extended to me, and unhesitatingly furnished the drawing, etc., as desired. But what was my surprise when I found this apparatus illustrated and described according to the drawing and details given by me, in the report of the commissioners to government, in which he claimed the same as having been designed and used by him several years before."

That is in substance what I wish to call your attention to. I have had a conversation with this commissioner within the last few weeks, and he stated to me that the omission to give me credit for this paper was entirely accidental. That he sent to the printer the memorandum I had made, together with my name attached; that he had scratched out certain portions of his paper to admit this, and any injustice done me in that report was done accidentally, and not through any fault of his. I wish to make this statement, and correct that portion of my paper.

Mr. Hancock exhibited a percolator, patented by Laurent Dursse, and proposed to read a short description of it.

Mr. Ebert.—I do not think that anything patented can be advertised by reading a paper to this Association. That has been the custom.

The Secretary.—If Mr. Hancock will describe it, or read the description, it will do no harm, but neither description nor cut can be published in our minutes. The precedent was established in 1866, when a patented apparatus for distillation was submitted, and a short description thereof read. The Association resolved it was very much obliged to the gentleman for the trouble he had gone to, but respectfully declined to publish anything about it, because it was patented.

Mr. Hancock.—I do not think it referred to apparatus. I think it was a proprietary article.

The Secretary.—The custom has been to admit patented apparatus in the exhibition-room, but to exclude from it everything that has the semblance of patent medicine.

Mr. Thompson.—The Proceedings of last year contain a description and cut of a retort stand which is patented.

The Secretary.—It is not patented.

Mr. Thompson.—A Washington man holds a patent for the stand which Dr. Squibb uses, and I think he pays him a royalty.*

Mr. Hancock.—If that is the case, I will not urge the reading of this paper, but our laws should be changed so they will not apply to apparatus.

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* The following letter corrects this statement:

Washington, D. C., Sept. 22d, 1874.

Mr. John M. Maisch, Philadelphia.

My dear Sir: Since my return to Washington I have learned that I was mistaken in my remarks before the Association at Louisville, in regard to a portion of Dr. Squibb's retort-stand and burette-holder being patented. In the first lot of the apparatus which Dr. Squibb had made, it seems he did unknowingly make use of Mr. O'Donnell's patent retort-stand, and when the fact came to his (Dr. Squibb's) knowledge, he paid O'Donnell for the use of it. I had supposed that he was still using it at the time he exhibited his apparatus at Richmond, but Mr. O'Donnell informs me that his patent was not used at all by Dr. Squibb in the apparatus exhibited by him at Richmond. Being thus authoritatively advised of my error, I hasten to make amends, by asking that you publish so much of this note with my remarks, as will relieve Dr. Squibb of any unjust imputations.

Yours truly,
W. S. Thompson.

If a gentleman gets up an apparatus for pharmaceutical uses which is an improvement, he deserves credit for it, and the thanks of all pharmaceutists, and he is perfectly right in having his invention protected by a patent. But when you come to a patent medicine, I regard that as a different thing altogether. I shall urge an amendment so as not to let this refer to apparatus. I think every man has a right, and it is perfectly legitimate and honorable, that he should protect his discovery or invention by a patent, when it applies to apparatus.

Mr. Fehr.—In Germany there are twenty-five States, and it requires in every State about $100 to secure a patent. In this country, patents are very cheap, and of course it is a great encouragement and inducement for a man to think about working out something that is an improvement in science.

Mr. Remington.—I cannot let the statement that Mr. Thompson made go by without some correction. I heard Dr. Squibb in conversation say that after getting up the retort-stand illustrated in the last year's Proceedings, and some other apparatus there, that he ascertained that somebody in Washington had taken out a patent for one small part of it, the little clamp arrangement, the sort of stirrup which attaches the various parts to the retort-stand. The remarks that have been made would lead to the idea that Dr. Squibb had had that stand patented; so far from that, I say unhesitatingly that Dr. Squibb brought that stand here, and made it for the benefit of the whole profession, with no view to reaping pecuniary benefit at all, and that any insinuation to that effect is not right.

Mr. Thompson.—My friend who has just taken his seat must have a wonderful power of conception to imagine that I insinuated that Dr. Squibb had that apparatus patented for pecuniary considerations. I did not consider that Dr. Squibb got that apparatus up for pecuniary profit, but what I stated was that the retort-stand which Dr. Squibb uses, was patented, and that he does pay a royalty for the use of it. I never understood that Dr Squibb had any improvement or anything else patented.

Mr. Remington.—I was only afraid that the Association would get that impression.

The Executive Committee reported the following applications for membership:

Cyrus L. Mobley, Louisville, Ky.,
August H. Vordick, St Louis, Mo.,
Edward H. Buehler, New York,
Theophilus B. Ball, Ironton, Ohio,
Vermont Hatfield, Middletown, Ohio,
Charles A. Smith, Springfield, Ohio,
James M. Jackson, Columbia, Lancaster Co., Pa.

Messrs. McAfee and McIntyre being appointed tellers, reported the unanimous election of the candidates.

The Business Committee presented a communication from Mr. Streit, of Illinois, in reference to pharmaceutical legislation, with the request of the gentleman that it be referred to the Committee on Legislation. It was, on motion, so referred.

Mr. Bedford gave a synopsis of his investigation of the subject of Query 20, and stated that commercial carbonate of magnesium contains also soda, lime, traces of potassa, and some sulphuric acid.

The Business Committee read the following communication from Mr. Bakes:

PHILADELPHIA, Sept. 7th, 1874.

TO THE AMERICAN PHARMACEUTICAL ASSOCIATION.

The approaching Centennial exhibition in Philadelphia in 1876 will draw together people from all parts of the United States and Europe, and it is desirable that all branches of industry should be properly represented, in order to show the progress that has been made during the first one hundred years of our national existence, and believing that our own profession should have a prominent position, I would offer for your consideration the following suggestions:

That sufficient space be applied for in the Centennial building, in which to fit up a pharmaceutical store, which should represent the highest type of American pharmacy, the fixtures and counters of hard woods, and made in sections, and the glassware and cases of the most elegant style and finish. The stock should represent the U. S. Pharmacopœia, and such remedies as are frequently prescribed in regular practice that are not on the officinal list. Perfumery and patent medicines should be excluded, but the various medical appliances and instruments useful in the sick-chamber, together with the most approved articles of diet would properly be embraced in the stock.

The cost of such an exhibition might be met by shares of stock at *twenty-five dollars* each, and no doubt the requisite amount could be obtained as a loan from the members of the Association; at the close of the Exposition, after duly advertising the "pharmacy" could be sold at auction to the highest bidder, and we believe the possessor of the "Centennial Pharmacy" would have an establishment that would of itself be a valuable advertisement wherever located. The proceeds of the sale should be divided among the shareholders.

To accomplish this undertaking would require the appointment of a judicious and energetic committee, composed of representatives from the various colleges of pharmacy.

I might write more fully on the details of this scheme, but I think from what I have written my plan will be fully understood.

Very respectfully,
WILLIAM C. BAKES.

MR. BAKER.—The committee respectfully suggest that this matter had better be taken in hand by private enterprise. If any large house would get up such an establishment they could do it, and it might be valuable to them as an advertisement. We think it would be very practicable in that form.

MR. COLCORD.—I would like to see such a store in the exhibition, and it could be done in a private way by some one. If you refer it to a judicious committee they would be able to carry out such a project. There is a large class of men who do that kind of cabinet work for apothecary stores, and they would be willing to furnish that as an advertisement of their work. The glass manufacturers would be willing to do the same, and I have no doubt but that such a project could be carried out successfully. The bottles and labels could be furnished, the labels burned in in gold, by the usual process, and many glass companies would be glad to furnish that part of the exhibition. Then the medicines could be furnished by this committee by putting in such articles as Dr. Squibb and some other manufacturers make. It could all be done in that way without much trouble and expense, except to the parties who contribute, and they would own their own goods afterwards.

The communication of Mr. Bakes was, on motion, received and laid upon the table.

The Committee on Specimens read a draft of their report, which was, on motion, accepted, and referred back to the committee to finish it for publication (see page 305).

The Committee on Papers and Queries presented the following report, which was accepted, and ordered to be spread upon the minutes.

Report of the Committee on Papers and Queries.

QUERY 1. An essay on the drug mills now furnished by the manufacturers, giving practical advantages of the various kinds and the results of experiments proving their ability to produce powders fine enough for most pharmacal purposes, if such exists.

Referred to Andrew Blair, Philadelphia.

2. Is the Ether obtained from manufacturing chemists as pure and strong as the Pharmacopœia directs, and what are the usual impurities?

Accepted by P. W. Bedford, New York.

3. Are the Sugar-coated Pills vended in our market always what they purport to be? A paper giving the results of an examination of the various makes.

Accepted by David Hayes, New York.

4. What progress has been made in manufacturing important medicinal chemical preparations within the last few years which formerly were exclusively imported?

Referred to A. H. Jones, Philadelphia.

5. What is the composition of the so-called tasteless Iron preparations originated by J. L. A. Creuse?

Referred to Prof. G. F. H. Markoe, Boston.

6. The French filtering paper that is imported at the present time contains an appreciable amount of soluble and a large amount of coloring matter; what substitutes can be used or what can be done to cause an improvement in its quality?

Referred to Joseph S. Talbot, Boston.

7. Phosphuretted resin, by A. W. Gerrard, has been introduced as an eligible mode of administering phosphorus in pilular form. Can an agreeable emulsion be prepared from it, or a desirable liquid preparation?

Accepted by George W. Sloan, Indianapolis.

8. What drugs are now successfully cultivated here which some years ago were obtained from foreign countries?

Accepted by B. O. Wilson, Boston.

9. An essay on Paraffin, and on its uses in pharmacy.

Referred to B. F. Stacey, Charlestown, Mass.

10. It has been asserted that Chloral Hydrate possesses powerful antiseptic properties, and has been used to preserve anatomical preparations; an essay on this subject.

Accepted by T. Roberts Baker, Richmond.

11. There is reason for believing that our Oleum theobromæ is largely adulterated. How can adulterations be detected, and to what extent do they exist?

Accepted by Gustavus Ramsperger, N. Y.

12. What is the amount of benefit derived from the introduction of glycerin into the formulas for fluid extracts of the U. S. Pharmacopœia?

Accepted by J. Faris Moore, Baltimore.

13. Within the last few years a number of new suppository moulds have been introduced of different forms. Which of them seems best adapted for practical purposes?

Accepted by R. V. Mattison, Philadelphia.

14. Cinnamon water, when made strictly by U. S. Pharmacopœia, is apt to become cloudy from deposition of cinnamic acid. How may this be prevented without impairing the usefulness of the preparation?

Accepted by W. Partlow Thompson, Baltimore.

15. What are the causes of the difficulties (precipitation) which some pharmacists complain of in the preparation of Spiritus Ammoniæ Aromaticus, U. S. P.?

Accepted by William McIntyre, Philadelphia.

16. An essay on Mezquite gum; it it said that large quantities can be obtained. Can it not be used advantageously in pharmacy?

Accepted by A. W. Miller, Philadelphia.

17. Would it be advisable to decrease the specific gravities of some of the mineral acids of the Pharmacopœia which are supplied by manufacturers? It is alleged by some makers that such strong acids are not readily made, and that no advantage is derived from using them of such strength.

Accepted by P. W. Bedford, New York.

18. An examination of English narcotic extracts for quality.

Accepted by P. W. Bedford, New York.

19. It has been repeatedly asserted that the Castor Oil of the present day is deficient in strength, larger doses being required than formerly. Is this so, and is it on account of adulteration?

Accepted by Edward A. Smith, Baltimore.

20. Pancreatic preparations have made their appearance in the market recently in considerable variety; what value do they possess, and what is the most eligible mode of administering?

Accepted by W. S. Thompson, Washington.

21. What is the most desirable process for making Iodoform; how can it best be dispensed; and how can the vessels in which a preparation of it has been made be quickly deodorized?

Accepted by H. M. Wilder, Philadelphia.

22. An examination into the accuracy of the graduated measures supplied by the jobbing druggists or manufacturers; which kind are most reliable?

Accepted by W. P. Thompson, Baltimore.

23. Can the pest, commonly termed the "Potato Fly" (Cantharis vittata), be made serviceable in pharmacy; what preparations would be most useful?

Accepted by William H. Egle, M.D., Harrisburg.

24. Chlorodyne is frequently prescribed by physicians, and seems to be a useful preparation in many cases; give a formula for it which would be suitable for introduction into the U. S. Pharmacopœia?

Accepted by J. F. Hancock, Baltimore.

25. Pharmacists have repeatedly complained that Sulphate of Morphia, as supplied by our manufacturers, is not as soluble as it should be; and strong hypodermic solutions are not readily made; why is this, and what is the remedy?

Accepted by Charles Rice, New York.

26. What causes Ergot of Rye to deteriorate, and what conditions favor the deterioration; how may it be best preserved?

Accepted by J. L. Lemberger, Lebanon, Pa.

27. Is Artanthe elongata really the true source of the Matico plant; if not, what plant furnishes the drug?

Referred to Prof. J. M. Maisch.

28. What are the objections to having the United States and British Pharmacopœias *agree* in the strength of those preparations which are common to each?

For general acceptance.

29. An examination of Croton chloral hydrate, defining clearly its present therapeutical position.

Referred to William H. Egle, M.D., Harrisburg, Pa.

30. Can a process be devised for the production of Apomorphia, which will reduce the cost so that it may become available in pharmacy?

Referred to Charles Rice, New York.

31. What is the composition of the nostrum Vinegar Bitters? An essay on its composition with a view of exposing this fraud upon the public.

Accepted by O. Eberbach, Ann Arbor, Mich.

32. What species of insects are found in America which could be used for vesicating purposes; are any of them to be had in sufficient quantities to become an article of commerce, and how do they compare in strength with the Cantharis vesicatoria and other species found in commerce?

Accepted by William Saunders, Ontario, Canada.

33. Rhubarb has of late been much damaged by insect pests; does the rhubarb as shipped from China contain the insect, or does it become infested after arrival in Europe and America?

Accepted by William Saunders, Ontario, Canada.

34. In the arrangement of the dispensing department of a pharmacy, what advantages are there in having the counter upon which prescriptions are prepared in full view of the customer?

Accepted by J. F. Hancock, Baltimore.

35. Santonin has been seen in the market in thick prisms, very different in appearance from the usual flat crystals; is this due to crystallization from a different liquid from that ordinarily used?

Accepted by O. Eberbach, Ann Arbor, Mich.

36. To what agency in Blue Mass is the medicinal effect due; if to a small quantity of oxide, can a preparation be devised which will be more uniform and certain in its results, formed by mixing the oxide intimately with an inert powder?

Accepted by J. F. Hancock, Baltimore.

37. Can the contamination of Pyrophosphoric Acid be prevented in Dilute Phosphoric Acid when the latter is prepared from the Glacial Phosphoric Acid of different manufacturers?

Accepted by Louis Dohme, Baltimore.

38. Is Pancreatin converted into Pepton when it is digested with Acidulated Pepsin?

Accepted by E. Scheffer, Louisville.

39. It is asserted that it is highly dangerous to mix Nitric and Carbolic Acids on account of the violent and instantaneous explosions that almost invariably occur; what are the proportions most likely to occasion the explosions, and what are the chemical reactions resulting when these two substances are brought in contact?

Accepted by C. Gilbert Wheeler, Chicago.

40. What are the best tests of purity of Hydrate of Chloral?

Accepted by Joseph Roberts, Baltimore.

41. A quantitative estimation of the Carbonic Acid in the numerous brands of Bicarbonate of Soda existing in the American market, and of the impurities.

Accepted by P. W. Bedford, New York.

The Secretary announced that the silk cocoons and the specimens of Pyrethrum roseum, exhibited by M. C. Betanelly & Co., of Philadelphia, also the collection of pressed medicinal herbs exhibited by B. O. & G. Wilson, of Boston, are presented to the Louisville College of Pharmacy.

After some discussion on patented and proprietary articles, Mr. A. W. Miller offered the following:

Resolved, That at our future meetings proprietary medicines of foreign manufacture be rigidly excluded in the same manner as our domestic nostrums.

The resolution was adopted.

Mr. Hancock offered the following resolution:

Resolved, That patented apparatus for pharmaceutical use may be admitted to our exhibitions, and illustrations and descriptions of such apparatus published in the Proceedings when of sufficient merit.

MR. MAISCH.—I would like to ask whether that means that any description coming here would necessarily have to be accepted and published by the Association? If that is the case I shall vote against it. Of the points of merit that are claimed for the apparatus exhibited at this session, several are repetitions of each other, and certainly there would be no limit to descriptions and illustrations if the resolution would be accepted in this way.

MR. SARGENT.—I offer an amendment, "That no prejudice exist on account of an apparatus having been patented, but that it stand on its merits the same as if it had not been patented."

MR. HANCOCK.—I accept the amendment.

MR. EBERT.—I object to this resolution, which, if carried, will pad our Proceedings with illustrations that will make us ridiculous before the whole scientific world. A gentleman sends a piece of apparatus, claims merit for it, when it is an article that has been in use as long as I have been in the drug business, and as long as glass has been blown, and asks that it be illustrated in our Proceedings; to grant such a request would make us ridiculous before the scientific world. If you admit one you must admit them all, and every patentee of a little alcohol lamp will come and present it to this Association to have it illustrated in the Proceedings, so that his sales may be increased. Our course has been the right one. Let them be exhibited in the exhibition-room, and if they have any extra merits bring them up and let them be explained; we are always willing to learn. It makes no difference what the article is; so long as it is a proprietorship this Association should not indorse it in any way or shape.

MR. REMINGTON.—I want to be heard a moment on this subject. It seems to me the object of this Association is to come together for mutual good. We confer together, give each other ideas, and take them with us, and follow them practically in our shops. A man comes here with a patented article, and advertises before this Association. He gives us the information and then says, "I will not allow you to make it; you must come to me and buy it, and your money must go into my pocket;" and if we allow patented articles to come in for publication in our Proceedings, we will open a door that we shall find difficult to shut.

MR. EBERT.—One word more; if you allow this every manufacturer of patent rights will append to his claims a page or two abstracted from the Proceedings of the American Pharmaceutical Association.

Mr. Roberts moved that the resolution be laid upon the table, which was agreed to.

The Business Committee offered the following resolutions, which were severally adopted.

Resolved, That the thanks of the visiting members of the American Pharmaceutical Association be and are hereby tendered to our brethren in Louisville for the courteous reception they have extended to us; that to them is due the fact that our meeting will rank among the most pleasurable we have ever held.

Resolved, That the thanks of the American Pharmaceutical Association are hereby tendered to the press of Louisville for the exact and fair reports they have made of our proceedings.

The President appointed the following committee on formulas for elixirs: William McIntyre, Rich. V. Mattison, and George W. Kennedy.

Mr. Holmes read a volunteer paper on an agreeable preparation of Castor Oil, which was accepted and referred (see page 378).

The minutes of the sixth session were read by the Secretary, and approved, after which, on motion, the Association adjourned to meet again in the city of Boston, Mass., on the first Tuesday of September, 1875, at 3 o'clock P.M.

JOHN M. MAISCH,
Permanent Secretary.

For the attendants at the twenty-second meeting of the American Parmaceutical Association a reduction of fare could be secured only for comparatively short distances over the railroads leading to Louisville, where an industrial exhibition was in progress at the same time the meeting was held. The so-called Great Trunk lines, leading from the Atlantic States to the West, had, during the year, entered into an agreement not to grant any reduction below the regular fares, and it was feared that this might seriously interfere with the attendance from the eastern section of the country. Happily these misgivings proved to be groundless. Over forty members, including ladies, left Baltimore and Washington on the morning of Saturday, September 5th, and proceeded by way of the Baltimore and Ohio Railroad through a country replete with picturesque scenery and historical interest. A portion of this party went as far as Deer Park, situated upon the summit plateau of Big Savage Mountain, while another portion went to Grafton, with its picturesque surroundings, and still another portion visited Marietta, to examine the mounds erected there, as in some other western localities, by a prehistoric race. The majority of these parties, reinforced by other members, arrived together in Cincinnati, received the kind attentions of some of their fellow-members, and proceeded to Louisville, where the pharmacists and druggists had made preparations for their comfort and entertainment.

A promenade concert and hop was given in honor of the Association, in the upper concert room of Liederkranz Hall, on Wednesday evening, September 9th. The visiting ladies were invited to a drive through the city, and the most interesting points in the neighborhood, on Thursday afternoon. Friday afternoon was set apart for a visit to the Star Plate Glass Works, New Albany, Ind., the only works in the United States making polished plate glass. On Friday evening the members called upon Prof. J. Lawrence Smith, and spent a pleasant and profitable hour in examining his handsome and well-appointed laboratory and fine collections, and in conversation with prominent citizens and savants of Louisville. The invitation of the Liederkranz Society for this evening was likewise taken advantage of by many members and their ladies, who visited Woodland Garden to enjoy the vocal and instrumental concert, many remaining to participate in the dancing, which was kept up for some hours.

At almost all hours of the day and evening members and their ladies could be seen at the Industrial Exposition, generously opened to them free of charge by the managers. The badges, which for the first time had been provided for the attendants at this meeting, served not merely for the members to recognize each other, but they were likewise the means of opening many places of interest which would have otherwise been accessible with difficulty.

About seventy-five members, including the ladies, participated in the excursion to Mammoth Cave, for which round-trip tickets had been secured at $5.50, besides a reduction of twenty-five per cent., from the board and the entrance fee at the Cave. We have been informed by Colonel Miller, the superintendent of the Cave, that, with the exception of a party of eighty-four, consisting of students accompanied by their professors, about thirty years ago, this party of the American Pharmaceutical Association was the largest one that has visited this subterranean wonder. Sixty-six persons entered Mammoth Cave on Saturday, September 12th, and, passing over the short route, visited Gorin's Dome, the Bottomless Pit, the Giant's Coffin, the Star Chamber, etc., spending four to five hours in the Cave. On the following day sixty of the party travelled over the long route, remaining under ground between ten and eleven hours, passing through Fat Man's Misery, crossing the River Styx, Lake Lethe, and, by boats, Echo River, climbing the Rocky Mountains to take a look at the Dismal Hollow, and, at the end of the Cave, viewing the Maelstrom at the bottom of a pit one hundred and ninety feet deep. The grandeur of these subterranean corridors and rotundas, with their hanging and fallen rocks, their ancient now dry water-courses, their still rivers and ponds, their monotonous cascades, their innumerable stalactites and stalagmites of all conceivable forms, their quietness and impenetrable darkness, their eyeless fish and crawfish, is beyond description, and well repaid the long journey.

On the homeward trip from the Mammoth Cave the party scattered, doubtless well pleased with Louisville, the beautiful "City of the Falls," and the hospitality of which they had been the recipients.

JOHN M. MAISCH,
Recording Secretary.

LIST OF SOCIETIES, LIBRARIES, JOURNALS, AND INDIVIDUALS,

To whom complimentary copies of the Proceedings of this Association are forwarded.

The State Libraries of all the States of the Union except Connecticut.

Maine Pharmaceutical Association,	Portland,	Maine.
Bowdoin College,	Brunswick,	"
Dartmouth College,	Hanover,	New Hampshire.
Amherst College,	Amherst,	Massachusetts.
Harvard University,	Cambridge,	"
Massachusetts College of Pharmacy,	Boston,	"
City Library,	"	"
City Hospital,	"	"
Boston Athenæum,	"	"
Vermont Pharm. Ass'n, A. W. Higgins, Sec.,	Rutland,	Vermont.
University of Vermont,	Burlington,	"
Brown University,	Providence,	Rhode Island.
Trinity College,	Hartford,	Connecticut.
Yale College,	New Haven,	"
College of Pharmacy of the City of N. Y.,	New York,	New York.
American Druggists' Circular,	"	"
Journal of Applied Chemistry,	"	"
Astor Library,	"	"
Mercantile Library,	"	"
Long Island Historical Society,	Brooklyn,	"
Camden Pharmaceutical Association,	Camden,	New Jersey.
Philadelphia College of Pharmacy,	Philadelphia,	Pennsylvania.
College of Physicians,	"	"
Pennsylvania Hospital,	"	"
Academy of Natural Sciences,	"	"
American Philosophical Society,	"	"
Philadelphia Library,	"	"
Mercantile Library,	"	"
American Journal of Medical Sciences,	"	"
Dental Cosmos,	"	"
Maryland College of Pharmacy,	Baltimore,	Maryland.
University of Maryland,	"	"
Maryland Academy of Sciences,	"	"

Smithsonian Institution,	Washington,	Dist. Columbia.
Congressional Library,	"	"
Surgeon-General, U. S. Army,	"	"
National College of Pharmacy,	"	"
Richmond Pharmaceutical Association,	Richmond,	Virginia.
Med. Soc. of Virginia, L. B. Edwards, M.D. Sec.,	"	"
Medical Association of the State of Arkansas, Dr. J. H. Lenow, Secretary,	Little Rock,	Arkansas.
Tennessee College of Pharmacy,	Nashville,	Tennessee.
Louisville College of Pharmacy,	Louisville,	Kentucky.
Cincinnati College of Pharmacy,	Cincinnati,	Ohio.
Cincinnati Academy of Medicine,	"	"
Detroit Review of Medicine and Pharmacy,	Detroit,	Michigan.
University of Michigan,	Ann Arbor,	"
Chicago College of Pharmacy,	Chicago,	Illinois.
St. Clair Pharmaceutical Association of Southern Illinois,	Belleville,	"
Minnesota State Medical Society, Charles E. Smith, M.D., Secretary,	St. Paul,	Minnesota.
St. Louis College of Pharmacy,	St. Louis,	Missouri.
St. Louis Academy of Science,	"	"
St. Louis Mercantile Library,	"	"
St. Louis Public School Library,	"	"
Kansas College of Pharmacy,	Leavenworth,	Kansas.
Nebraska Medical Society, S. D. Mercer, M.D., Secretary,	Omaha,	Nebraska.
California Pharmaceutical Society,	San Francisco,	California.
Pacific Medical and Surgical Journal,	"	"
Western Lancet,	"	"
Montreal Chemists' Association,	Montreal,	Canada.
Canadian Pharmaceutical Society,	Toronto,	"

British Pharmaceutical Conference, Dr. J. Attfield, London.
Pharmaceutical Society of Great Britain.
Pharmaceutical Journal and Transactions, London.
Chemical News, London.
Chemist and Druggist, London.
Journal of Applied Science, London.
British Museum, London.
Philosophical Society, Glasgow.
Liverpool Chemists' Association.
Pharmaceutical Society at Edinburgh.
Academie Royale de Médecine, Bruxelles.
Société de Pharmacie Royale de Bruxelles.
Société de Pharmacie d'Anvers, Fr. Vaudelt, Sécrétaire.
Société de Pharmacie, M. Henri Buignet, Sécrétaire, Paris.
Academie des Sciences, Paris.
L'Union Pharmaceutique.

Répertoire de Pharmacie, Paris.
Schweizer Apotheker-Verein, Mr. R. Lindt, President, Bern.
Oesterreichischer Apotheker-Verein, Wien.
Oesterreichische Zeitschrift für Pharmacie, Wien.
K. Gesellschaft der Aerzte, Dr. Hauke, Secretary, Wien.
K. Akademie der Wissenschaften, Wien.
K. Bayer. " " München.
Neues Repertorium für Pharmacie, Prof. Buchner, München.
University of Strassburg.
Deutscher Apotheker-Verein, Dr. Schacht, Berlin.
Archiv der Pharmacie, Waisenhausbuchhandlung, Halle.
Chemisches Centralblatt, Dr. Rud. Arendt, Leipzig.
Jahresbericht für Pharmacognosie, Pharmacie, und Toxicologie, Prof. Dr. Wiggers, Göttingen.
Prof. Dr. Wöhler, Göttingen.
K. Akademie der Wissenschaften, Göttingen.
Pharmaceutische Central-Halle, Dr. H. Hager, Pulver mühle bei Fürstenberg.
Pharmaceutische Zeitung, Bunzlau.
Pharmaceutische Gesellschaft in St. Petersburg, St. Petersburg.
Pharmaceutisches Institut, Dorpat, Russia.
Pharmaceutical Institution, Stockholm, Sweden.
Kongelige Norske Universitet i Christiania.

LIST OF PUBLICATIONS RECEIVED,

For the American Pharmaceutical Association.

Societies and editors are respectfully requested to forward all publications intended for the American Pharmaceutical Association to the Permanent Secretary. European exchanges, if not sent by mail, will reach us through the Smithsonian Institution at Washington.

JOHN M. MAISCH,
145 North Tenth Street, Philadelphia, Pa.

American Journal of Medical Sciences, Philadelphia, 1874.

Medical News and Library, Philadelphia, 1874.

Dental Cosmos, Philadelphia, 1874.

Journal of Applied Chemistry. New York and Philadelphia.

The Pharmacist, Chicago, 1874.

Pacific Medical and Surgical Journal, San Francisco, 1874.

The Canadian Pharmaceutical Journal. Edited by E. B. Shuttleworth, 1874.

Pharmaceutical Journal and Transactions, London, October, 1873, to September, 1874.

Year-book of Pharmacy and Transactions of the British Pharmaceutical Conference, 1873.

The Chemist and Druggist, London, 1874, Nos. 1 to 12.

Bulletin de la Société Royale de Pharmacie de Bruxelles, 1874.

Rede gehalten am 25 Juli, 1873, von J. von Döllinger.

Sitzungsberichte der K. Bayer. Akademie der Wissenschaften, München, 1872, III, 1873, I, II, 1874, I, II, III.

Der Antheil der K. Bayer. Akad. d. Wiss. ander Entwickelungder Electricitätslehre, 1873.

Dr. Justus Freiherrn von Liebig zum Gedächtniss. Von Dr. Max von Pettenkofer, München, 1874.

Justus von Liebig als Begründer der Agrikultur-Chemie. Von August Vogel.

Ueber den Einfluss des Freiherrn Justus von Liebig auf die Entwicklung der Physiologie. Von Dr. Th. L. W. von Bischoff.

Buchner's Neues Repertorium, München, 1874.

Nachrichten von der K. Gesellschaft der Wissenschaften, etc. Göttingen, 1873.

Pharmaceutische Centralhalle, Berlin, 1874.

Archiv der Pharmacie, Halle, 1874.

Zeitschrift des allgemeinen oesterreichischen Apotheker-Vereines. Wien, 1874.

Anzeiger der K. Akademie der Wissenschaften. Wien, 1874.

Pharmaceutische Zeitschrift für Russland. St. Petersburg, 1873, Nos. 18–22.

Transactions of the State Medical Society of Virginia. Richmond, Va.

Annual Report of the Supervising Surgeon of the Marine Hospital Service of the United States, for the fiscal year 1873.

Nomenclature of Diseases prepared for the use of the Officers of the U. S. Marine Hospital Service.

Annual Report of the Surgeon-General, U. S. Army, 1874.

Schweizerische Wochenschrift für Pharmacie, 1873.

AUTHORIZED AGENTS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

Nominated by the Treasurer and Permanent Secretary, and approved by the President, to carry out the resolution passed at the fifth session of the 18*th Annual Meeting.*

California,	James G. Steele, 521 Montgomery St.,	San Francisco.
Dist. of Columbia,	Joseph W. Nairn, 901 Pennsylvania Av.,	Washington.
Delaware,	Linton Smith, M.D., 7th & Market Sts.,	Wilmington.
Illinois,	Henry W. Fuller, 24 Market St.,	Chicago.
Kansas,	Robert J. Brown, Fifth & Shawnee Sts.,	Leavenworth.
Kentucky,	C. Lewis Diehl, First & Walnut Sts.,	Louisville.
Louisiana,	John H. Pope, Jackson & Prytania Sts.,	New Orleans.
Maryland,	J. Faris Moore, Howard & Madison Sts.,	Baltimore.
Massachusetts,	Samuel M. Colcord, Tremont Street,	Boston.
Michigan,	William Johnston, 153 Jefferson Av.,	Detroit.
Missouri,	William H. Crawford, 732 Washington Av.,	St. Louis.
New Jersey,	Charles B. Smith, 831 Broad St.,	Newark.
New York,	Daniel C. Robbins, 91 Fulton St.,	New York.
	George C. Close, Smith & Schermerhorn,	Brooklyn.
Ohio,	Alfred C. Hill, Fourth & Smith Sts.,	Cincinnati.
Pennsylvania,	Rich'd M. Shoemaker, Fourth & Race Sts.,	Philadelphia.
	Alfred J. Rankin, 45 Sixth St.,	Pittsburg.
South Carolina,	Gustavus J. Luhn,	Charleston.
Tennessee,	Henry C. Steever, 2d & Madison Sts.,	Memphis.
Virginia,	T. Roberts Baker, Main Street,	Richmond.

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN PHARMACEUTICAL ASSOCIATION.

CONSTITUTION.

ARTICLE I. This Association shall be called the "American Pharmaceutical Association." Its aim shall be to unite the educated and reputable Pharmaceutists and Druggists of the United States in the following objects:

1. To improve and regulate the drug market, by preventing the importation of inferior, adulterated, or deteriorated drugs, and by detecting and exposing home adulteration.

2. To encourage proper relations between Druggists, Pharmaceutists, Physicians, and the people at large, which shall promote the public welfare, and tend to mutual strength and advantage.

3. To improve the science and the art of Pharmacy by diffusing scientific knowledge among Apothecaries and Druggists, fostering pharmaceutical literature, developing talent, stimulating discovery and invention, and encouraging home production and manufacture in the several departments of the drug business.

4. To regulate the system of apprenticeship and employment, so as to prevent, as far as practicable, the evils flowing from deficient training in the responsible duties of preparing, dispensing, and selling medicines.

5. To suppress empiricism, and to restrict the dispensing and sale of medicines to regularly educated Druggists and Apothecaries.

6. To uphold standards of authority in the Education, Theory, and Practice of Pharmacy.

7. To create and maintain a standard of professional honesty equal to the amount of our professional knowledge, with a view to the highest good and greatest protection to the public.

ARTICLE II. This Association shall consist of active, life, and honorary members, and shall hold its meetings annually.

Article III. The officers of the Association shall be a President, three Vice-Presidents, a Permanent Secretary, a Local Secretary, a Treasurer, and a Reporter on the Progress of Pharmacy, all of whom, with the exception of the Permanent Secretary, shall be elected annually, and shall hold office until an election of successors.

Article IV. All moneys received from life membership, together with such funds as may be bequeathed, or otherwise donated to the Association, shall be invested by the Treasurer in United States Government or State securities, the annual interest of which only shall be used by the Association for its current expenses.

Article V. Every proposition to alter or amend this Constitution shall be submitted in writing, and may be balloted for at the next Annual Meeting; when, upon receiving the votes of three-fourths of the members present, it shall become a part of this Constitution.

BY-LAWS.

CHAPTER I.

Of the President and Vice-Presidents.

Article I. The President shall preside at all meetings of the Association; in his absence or inability, one of the Vice-Presidents, or in the absence of all, a President pro tempore shall perform the duties of President.

Article II. In the absence of the Permanent Secretary, the President shall appoint a Recording Secretary pro tempore.

Article III. In meetings the President shall take the chair at the proper time; announce all business; receive all proper motions, resolutions, reports, and communications, and order the vote upon all proper questions at the proper time.

Article IV. In all ballotings, and on questions upon which the yeas and nays are taken, the President is required to vote, but his name should be called last; in other cases he shall not vote, unless the members be equally divided, or unless his vote, if given to the minority, will make the decision equal, and in case of such equal division the motion is lost.

Article V. He shall enforce order and decorum; it is his duty to hear all that is spoken in debate, and in case of personality or impropriety he shall promptly call the speaker to order. He shall decide all questions of order, subject to the right of appeal, unless in cases where he prefers to submit the matter to the meeting; decide promptly who is to speak when two or more members rise at the same moment; and be careful to see that business is brought forward in proper order.

Article VI. He shall have the right to call a member to the chair, in order that he may take the floor, in debate. He shall see that the Constitution and By-Laws are properly enforced.

ARTICLE VII. He shall appoint all committees, unless provided for in the By-Laws, or otherwise directed by the Association.

ARTICLE VIII. He shall sign the certificates of membership, and countersign all orders on the Treasurer. He shall obey the instructions of the Association, and authenticate by his signature, when necessary, its proceedings.

ARTICLE IX. He shall present at each annual meeting an address, embodying general scientific facts and events of the year, or discuss such scientific questions as may to him seem suitable to the occasion.

CHAPTER II.

Of the Permanent Secretary.

ARTICLE I. The Permanent Secretary shall be elected to hold office permanently, during the pleasure of the Association. He shall receive from the Treasurer an annual salary of $600, and the amount of his expenses incident to the meeting in addition to his salary.

ARTICLE II. He shall preserve fair and correct minutes of the proceedings of the meetings, and carefully preserve, on file, all reports, essays, and papers of every description received by the Association, and shall be charged with the necessary foreign and scientific correspondence, and with editing, publishing, and distributing the Proceedings of the Association, under the direction of the Executive Committee.

ARTICLE III He shall read all papers handed him by the President for that purpose; shall call and record the yeas and nays whenever they are required to be called; shall notify the chairman of every special committee of his appointment, giving him a list of his colleagues, and stating the business upon which the committee is to act; and shall notify every member of the time and place of each annual meeting.

ARTICLE IV. He shall be, ex-officio, a member of the Executive Committee.

CHAPTER III.

Of the Local Secretary.

ARTICLE I. The Local Secretary shall be elected annually, near the close of the Annual Meeting, and shall reside at or near the place where the next Annual Meeting of the Association is to be held.

ARTICLE II. He shall assist the Permanent Secretary in his duties; shall co-operate with any local committee in making arrangements for the Annual Meeting; shall correspond with the chairman of the several committees, and with other members, in advance of the meeting, for the promotion of its objects, and shall have the custody of specimens, papers, and apparatus destined for use or exhibition at the meetings.

CHAPTER IV.

Of the Treasurer.

Article I. The Treasurer shall collect and take charge of the funds of the Association, and shall hold, sign, and issue the certificates of membership.

Article II. He shall pay no money except on the order of the Secretary, countersigned by the President and accompanied by the proper vouchers.

Article III. He shall report to the Executive Committee, previous to each Annual Meeting, the names of such members as have failed to pay their annual contributions for three years, and also the names of such as have failed to return their certificates of membership after having been officially disconnected with the Association, and having been duly notified to return them.

Article IV. He shall present a statement of his accounts at each Annual Meeting, that they may be audited; he shall receive an annual salary of $400, and the amount of his expenses incident to the meeting in addition to his salary.

CHAPTER V.

Of the Reporter on the Progress of Pharmacy.

Article I. The Reporter on the Progress of Pharmacy shall be elected annually, and shall receive from the Treasurer for his services such sum as may be annually determined upon.

Article II. All journals and volumes received in exchange for the Proceedings by the Permanent Secretary, and such other journals as shall be deemed necessary, shall be sent to him by that officer for use in the compilation of his report; for all of which he shall be held responsible until returned to the Permanent Secretary for preservation.

Article III. From these and other available sources he shall prepare a comprehensive report on the improvements and discoveries in Pharmacy, Chemistry, and Materia Medica, and the collateral branches of knowledge; on the changes in condition of Pharmaceutical Institutions, together with such statistical, biographical, and obituary notices as will furnish an epitome of the progress and changes in the science and practice of Pharmacy, and of its votaries at home and abroad.

Article IV. The report on the Progress of Pharmacy shall commence with July 1st of the preceding year, and end with June 30th of the year in which it is submitted, shall be written in a form fitted for the printer, and shall be presented complete at the annual meeting.

Article V. In case of the illness or other inability of the Reporter to carry on the work of the report, the Permanent Secretary and the Chairman of the Executive Committee shall be required to make the best arrangements they can command, to continue the work to its completion.

CHAPTER VI.

Of Committees.

Article I. There shall be elected annually four standing committees: An Executive Committee, and a Committee on the Drug Market, each to consist of five members; a Committee on Papers and Queries, and a Business Committee, each to consist of three members.

Article II. The Executive Committee, of which the Permanent Secretary shall be a member, shall have charge of the revision of the Roll, the investigation of application for membership, and the publication of the Proceedings.

Article III. They shall report at each meeting a revised roll of members, with appropriate notices of deceased members, and the names of any who, having become disconnected with the Association, refuse to return their certificates of membership as provided by the By-Laws.

Article IV. They shall furnish to each member of the Association not in arrears one copy of the annual publication of the Proceedings, which publication shall contain the correct roll of members, full minutes of the several sittings, the Reports of the President and of the Committees, together with such addresses, scientific papers, discussions, notices of new processes, and preparations, as the Executive Committee may deem worthy of insertion, and shall fix the price at which the Proceedings shall be sold.

Article V. The Committee on the Drug Market shall report annually the condition of the Drug Market, the fluctuations in the supply and demand of drugs and chemicals, the variations in quality, and the adulterations and sophistications coming under their observation or reported to them by others, with any suggestions or recommendations for the improvement or better regulation of the trade; and they shall be authorized to report upon any adulterations and sophistications of immediate interest, through the Pharmaceutical Journals, as soon as practicable after their discovery.

Article VI. The Committee on Papers and Queries shall receive all Reports of Standing Committees, and all papers for the Association. They shall designate which of them shall be read at length, or which by title, and shall be furnished with a synopsis of each by the authors. They shall, in connection with the Business Committee, arrange the time which may be most appropriate or convenient for reading them.

Article VII. The Committee on Papers and Queries shall report, near the close of each Annual Meeting, a proper number of questions of scientific and practical interest, the answers to which may advance the interests of Pharmacy, and shall procure the acceptance of as many such questions for investigation as may be practicable.

Article VIII. Any person writing a paper for the Association must, to insure its publication in the Proceedings, refer the same with a synopsis of its contents to the Committee on Papers and Queries previous to the third session.

Article IX. It shall be the duty of every Standing Committee making a report annually to the Association, in like manner to furnish a copy of the same, together with a synopsis of its contents, to the Committee on Papers and Queries, before the first annual session of the Association.

Article X. The Business Committee shall be charged with the transmission of unfinished business from one Annual Meeting to another, and with collecting, arranging, and expediting the business during the sessions of the Annual Meetings.

CHAPTER VII.

Of Membership.

Article I. Every pharmaceutist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of Pharmacy, Chemistry, and Botany, who may be specially interested in Pharmacy and Materia Medica, who, after duly considering the objects of the Association and the obligations of its Constitution and By-Laws, are willing to subscribe to them, are eligible to membership.

Article II. Any person eligible to membership may make application in writing, with the indorsement of any two members of the Association in good standing, to any member of the Executive Committee, who shall report his application to the said Committee.

If after investigating his claims they shall approve his election, they shall, at the earliest time practicable, report his name to the Association, and he may be elected by two-thirds of the members present on ballot.

Article III. No person shall be a member of this Association, nor shall his name be placed upon the roll, until he shall have signed the Constitution and paid into the Treasury the sum of *Five Dollars* as an initiation fee, and the annual contribution for the current year, with the exception of *Delegates*, as provided in Article VI of this chapter.

Article IV. Every member shall pay in advance to the Treasurer the sum of *Five Dollars* as his yearly contribution, and is liable to lose his membership by neglecting to pay said contribution for *three successive years.*

Article V. Any member who shall pay to the Treasurer the sum of *Seventy-five Dollars at one time*, shall become a life member and shall be exempt from all future annual contributions.

Article VI. All local organizations of Pharmacists shall be entitled to *five* delegates, as their representatives in the Annual Meetings, who, *if present*, become members of the Association on signing the Constitution and paying the annual contribution for the current year, without paying the usual initiation fee.

Article VII. Members shall be entitled, on the payment of *Five Dollars*, to receive a certificate of membership signed by the President, one Vice-President, Permanent Secretary, and Treasurer, at the same time covenanting to return the same to the proper officer on relinquishing their connection with the Association.

Article VIII. Persons constitutionally elected to membership become permanent members, and their membership can cease only by resignation, non-payment of dues, or by expulsion, as provided in these By-Laws.

Article IX. Resignation of membership shall be made in writing to the Permanent Secretary or Treasurer, but no resignation shall be accepted from any one who is in arrears to the Treasury.

All resignations shall be acknowledged in writing by the officer who receives them, and shall be reported at the next Annual Meeting.

Article X. Any member may be expelled for improper conduct or the violation of the Constitution, By-Laws, or Ethics adopted by the Association, but no person shall be expelled unless he shall receive for expulsion two-thirds of all the votes cast at some regular session.

Article XI. Pharmaceutists, chemists, and other scientific men, who may be thought worthy the distinction, may be elected honorary members. They shall not, however, be required to contribute to the funds, nor shall they be eligible to hold office, or vote at the meetings.

CHAPTER VIII.

Of Meetings.

Article I. The meetings shall be held annually; provided, that in case of failure of this from any cause the duty of calling the Association together shall devolve upon the President or one of the Vice-Presidents, with the advice and consent of the Executive Committee.

Article II. The order of business at the first session of each Annual Meeting shall be as follows:

Section 1. Promptly, at the time named in the notice issued for the meeting, the President, or in his absence one of the Vice-Presidents, or in their absence a President pro tempore, shall officiate.

Section 2. In the absence of the Permanent Secretary the President shall appoint a Recording Secretary pro tempore, who shall perform the duties of the Permanent Secretary until his arrival.

Section 3. Nineteen members shall constitute a quorum for the transaction of business.

Section 4. The President shall appoint a committee of three persons to examine the credentials of delegates, which committee shall attend to that duty. The President's address may then be read, after which the committee shall report to the Association as soon as practicable, when the Secretary shall call the roll, noting the names of the delegates and members in attendance.

Section 5. The Executive Committee shall present names recommended for membership, when the President, having ascertained that a quorum of members is present, shall order an election by ballot, and appoint two tellers.

Section 6. Reports of committees shall be presented, read by their titles, the synopsis, or in full, and laid on the table for future consideration.

Section 7. The President shall call the roll of Colleges and Associations represented, requesting each delegation in turn to appoint one member, the persons so selected to act as a committee to nominate officers and the Standing Committees for the ensuing year; in addition to which he shall appoint five members, who are not delegates, to act with the committee.

Section 8. The reports of the Executive Committee, of the Permanent Secretary, and of the Treasurer, shall be read by title or in full.

Section 9. A committee of five shall be appointed to examine and report upon specimens exhibited.

Section 10. Incidental business may be called up by the Business Committee.

ARTICLE III. The order of business at the second session of each Annual Meeting shall be as follows:

Section 1. The President shall call the Association to order.

Section 2. The Secretary shall read the minutes of the preceding meeting, which may be amended if necessary, and shall then be approved.

Section 3. The Report of the Committee on Nominations shall be read; when the President shall appoint tellers, and the Officers and Committees nominated shall be balloted for.

Section 4. The officers elected shall take their respective places.

Section 5. The Executive Committee shall present names recommended for membership, when a ballot shall be ordered for their election.

Section 6. Reports of Standing Committees shall be read.

Section 7. Reports of Special Committees shall be read.

Section 8. The second session shall close with the examination of specimens on exhibition.

ARTICLE IV. The order of business at subsequent sessions shall be determined by the Business Committee, with the consent of the Association.

CHAPTER IX.

Of Rules of Order and Debate.

ARTICLE I. The ordinary rules of parliamentary bodies shall be enforced by the presiding officer, from whose decision, however, appeals may be taken, if required by two members, and the meeting shall thereupon decide without debate.

ARTICLE II. When a question is regularly before the meeting and under discussion, no motion shall be received but to adjourn, to lay on the table, for the previous question, to postpone to a certain day, to commit or amend, to postpone indefinitely; which several motions have precedence in the order in which they are arranged. A motion to adjourn shall be decided without debate.

Article III. No member may speak twice on the same subject, except by permission, until every member wishing to speak has spoken.

Article IV. On the call of any two members, the yeas and nays shall be ordered, when every member shall vote, unless excused by a majority of those present, and the names and manner of voting shall be entered on the minutes.

CHAPTER X.

Miscellaneous.

Article I. In all such points of order as are not noticed in these By-Laws, the Association shall be governed by the established usages in all assemblies governed by parliamentary rules.

Article II. Every proposition to alter or amend these By-Laws shall be submitted in writing, and may be balloted for at any subsequent session, when, upon receiving the votes of three-fourths of the members present, it shall become a part of the By-Laws.

Article III. No one or more of these By-Laws shall be suspended.

FORM OF APPLICATION FOR MEMBERSHIP.

APPROVING of the objects of the American Pharmaceutical Association, I am desirous of joining it in membership; and having read its Constitution and By-laws, I hereby signify my approval of the same, and subscribe to them.

....

Address, ...

I hereby agree to return my certificate of membership in the American Pharmaceutical Association to the Treasurer of that body, if I shall hereafter cease to be connected in membership with it.

....

TESTIMONIALS.

The undersigned, members in good standing, being personally acquainted with of testify to his moral character, his skill as a practical Druggist and Pharmaceutist, and his professional probity and good standing, and they recommend him for membership in the American Pharmaceutical Association.

NAME. ADDRESS.

ROLL OF MEMBERS.

HONORARY MEMBERS.

UNITED STATES OF AMERICA.

Montgomery J. Bailey, M.D.,	New York,	New York,	1856
Daniel B. Smith,	Philadelphia,	Penna.,	1856
George B. Wood, M.D.,	"	"	1857

FOREIGN COUNTRIES.

AUSTRIA.

Anton von Waldheim, *Vienna*, 1871.

BELGIUM.

A. T. De Meyer, *Brussels*, 1868.
Norbert Gille, *Brussels*, 1868.

ENGLAND.

Dr. John Attfield, *London*, 1871.
Dr. Robert Bentley, *London*, 1872.
Henry B. Brady, *Newcastle-on-Tyne*, 1871.
Daniel Hanbury, *London*, 1868.
Dr. J. Redwood, *London*, 1871.

FRANCE.

Dr. A. Chevalier, *Paris*, 1871.
Dr. J. Léon Soubeiran, *Montpellier*, 1871.
Dr. Augustin A. Délondre, *Sevres*, 1871.
Stanislas Martin, *Paris*, 1872.

GERMANY.

Dr. Adolph Duflos, *Breslau*, 1871.
Dr. Hermann Hager, *Pulvermühle near Fürstenberg*, 1868.
Dr. F. A. Flückiger, *Strasburg*, 1868.
Dr. Frederick Mohr, *Bonn*, 1868.
Dr. G. C. Wittstein, *Munich*, 1868.

NETHERLANDS.

Dr. J. E. De Vrij, *Hague*, 1871.

RUSSIA.

Dr. G. Dragendorff, *Dorpat*, 1868.

ACTIVE MEMBERS.

☞ Members are requested to notify the Secretary and Treasurer of all changes of address.

(The names of life members in SMALL CAPITALS. Names of life members under the old Constitution in *italics*.)

UNITED STATES OF AMERICA.

ALABAMA.

Mobile.

Brown, Charles Scott,	1873
Candidus, Philip Charles,	1857
Mohr, Charles,	1871
Primo, Manuel,	1868
Punch, William F.,	1874

Selma.

McVoy, James L.,	1871
Wilkins, John D.,	1871

ARKANSAS.

Hot Springs.

Rockafellow, C. N.,	1873

Little Rock.

Beidelman, John Wilmer,	1871
McAlmont, John J.,	1871
Naulty, William H.,	1870

CALIFORNIA.

San Francisco.

Calvert, John,	1870
Moffit, John W.,	1870
Moffitt, Thomas S.,	1861
Painter, Emlen,	1870
Simpson, William,	1870
Steele, Henry,	1859
Steele, James G.,	1859
Wenzell, William T.,	1870

Eureka, Humboldt Bay.

McKay, George J.,	1864

Marysville, Yuba Co.

Flint, John Henry,	1873

Petaluma, Sonoma Co.

Maynard, Frederick T.,	1864

Vallejo, Solano Co.

Frost, James,	1870
Topley, James,	1869

COLORADO.

Central City.

Best, John,	1866

Del Norte, Conegos Co.

Cheney, Judson Rollin,	1868

Denver.

Covell, Thomas Jefferson,	1864

COLUMBIA, DISTRICT OF.

Washington.

Baldus, William T.,	1872
Bannvart, Charles A.,	1856
Bury, Edward Berkley,	1870
Christiani C.,	1874
Cristiani, Theodore,	1873
Cromwell, Zachariah William,	1870
Entwisle, William B.,	1873
Ferguson, Robert Benedict,	1867
Gaither, Francis Singleton,	1860
Heller, Peter Henry,	1871
Howard, George M.,	1871
Kidwell, John Lawrence,	1856
Major, John R.,	1873
Milburn, John Alexander,	1858
Nairn, Joseph Wilson,	1858
O'Donnell, James Dominic,	1870
Oldberg, Oscar R.,	1873
Rothrock, Weller,	1869
Sayre, Charles Le Roy,	1869
Simms, Giles Green Craycroft,	1860
Taber, Edward M.,	1874
Thompson, William S.,	1871
Tyson, Samuel Ellicott,	1857

CONNECTICUT.

Hartford.

Lambe, John J.,	1868

Litchfield.

Gates, Howard E.,	1873

Middletown.

Pitt, John R., Jr.,	1872

New Haven.

Daggett, Alfred, Jr.,	1865
Daggett, Henry,	1871
Kelsey, Henry, Jr.,	1873

Stamford.

Haight, William B.,	1872
Morrison, Samuel C.,	1871

Waterbury.

Dikeman, Nathan,	1859
Munson, Luzerne J.,	1872

West Winstead.

Phelps, Dwight,	1873

Windsor Locks.

Holden, Henry Clay,	1870

DELAWARE.

Wilmington.

McInall, Edward, Jr.,	1867
Shoemaker, Benjamin,	1867
Simms, John H.,	1867
Smith, Linton,	1870

New Castle.

Ferris, Charles E.,	1867

FLORIDA.

Fort George.

Rollins, John Francis,	1859

GEORGIA.

Atlanta.

Peacock, Frederick S.,	1871
Schumann, Theodore,	1860

Augusta.

Land, Robert H.,	1859

Macon.

Zeilin, John Henry,	1859

Milledgeville.

Clark, John M.,	1857
Grieve, Fleming G.,	1859
Cotting, William A.,	1869

Rome.

Fenner, William R.,	1871

ILLINOIS.

Aurora.

Howell, Charles C.,	1871

Belleville.

Baker, Nathan T.,	1871
Steingoetter, Henry,	1871
Streit, Alexander G. F.,	1874

Bloomington.

Dyson, Dunbar S.,	1856

Bradford, Stark Co.

Plummer, David G.,	1869

Champaigne.

Day, Charles W.,	1873

Chicago.

Bartlett, N. Gray,	1864
Biroth, Henry,	1865
Blocki, William F.,	1863
Borcherdt, Julius C.,	1867
Brown, Thomas,	1865
Buck, George,	1860
Ebert, Albert E.,	1864
Fox, Daniel S.,	1872
Fredigke, Charles Christian,	1869
Fuller, Henry W.,	1865
Fuller, Oliver F.,	1869
Gale, Edwin O.,	1857
Gale, William H.,	1857
Garrison, Herod Dailey,	1869
Hanning, John T.,	1864
Heuermann, Henry W.,	1869
Hirsh, Joseph,	1869
Holt, Alvin E.,	1873
Hooper, John H.,	1865
Jacobus, Judson S.,	1870
Jamieson, Thomas N.,	1869
Jauncey, William,	1873
Mahla, Frederick,	1864

McPherson, George,	1865
Merkel, Louis J.,	1871
Mill, James W.,	1864
Milleman, Philip L.,	1866
Paine, James D.,	1857
Palmer, Hosea W.,	1870
Parsons, John,	1865
Patterson, Theodore H.,	1869
Reinhold, William,	1866
Sargent, Ezekiel H.,	1864
Schroeder, Nobel,	1866
Sharp, J. Perine,	1865
Smith, Albert A.,	1869
Strehl, Louis C.,	1866
Sweet, Henry,	1865
Whitfield, Thomas,	1865
Willard, Joseph,	1865
Wilson, Julius H.,	1869
Woltersdorf, Louis,	1865

Englewood, Cook Co.

Peirpoint, Newton,	1869

Galesburg.

Clark, Albert B., Jr.,	1868
Devendorf, Almond Smith,	1872

Highland.

Mueller, Adolphus,	1871

Peoria.

Colburn, Walter,	1869
Singer, Peter J.,	1869

Quincy.

Schroder, Hermann,	1871

INDIANA.

Evansville.

Lilly, James E.,	1872

Fort Wayne.

Hisner, Henry C. W.,	1874

Indianapolis.

Dryer, James W.,	1871
Miller, Edward T.,	1859
Schrader, Henry,	1869
Sloan, George W.,	1857

Kendallville.

Lohman, George H.,	1872

Logansport.

Dale, Frank C.,	1874

Madison.

Harper, Frank M.,	1874

New Albany.

Scribner, Benjamin Franklin,	1858

Terre Haute.

Buntin, William C.,	1874

IOWA.

Davenport.

Ballard, John W.,	1871

Dubuque.

Ruete, Theodore W.,	1870

Fort Madison.

Schaefer, George H.,	1871

Washington.

Cook, William A.,	1871
Ink, Parker P.,	1872

KANSAS.

Fort Scott.

Ingalls, Albert O.,	1869

Lawrence.

Leis, George,	1869

Leavenworth.

Brown, Robert J.,	1862
Parham, Robert,	1868
Pettit, Henry M.,	1860

KENTUCKY.

Catlettsburg.

Patton, William Allison,	1873

Covington.

Nodler, Peter,	1870
Zwick, George Gilbert,	1874

Frankfort.

Averill, William Henry,	1874

Lexington.

Frost, John J.,	1874
Richardson, Marius D.,	1874

Louisville.

Bell, Gotthard Emmanuel,	1874
Carey, George H.,	1866
Colgan, John,	1867
Davis, Vincent,	1874
Diehl, Conrad Lewis,	1863
Huddart, John P.,	1870
Hughes, Henry A.,	1857
Jenkins, Thomas E.,	1866
Jones, Simon N.,	1870
Kielhorn, Henry,	1874
Lingelbach, Ferdinand,	1874
McAfee, James A.,	1874
Miller, Frederick C.,	1874
Mobley, Cyrus W.,	1874
Newman, George A.,	1866
Peter, Arthur,	1874
Pfingst, Edward C.,	1874
Pfingst, Ferdinand J.,	1867
Pfingst, Henry A.,	1874
Rogers, Wiley,	1874
Scheffer, Emil,	1872
Schmidt, William G.,	1874
Strassel, William,	1870
Sutton, Ellsworth S.,	1871
Sutton, Peter P.,	1871
Wilder, Graham,	1868

LOUISIANA.

New Orleans.

Bugge, Andreas Valdemar,	1868
Keffer, William P.,	1866
Pope, John H.,	1860

Bayou Goula.

Viallon, Paul L.,	1870

New Iberia.

Lee, James A.,	1856

Plaquemine.

Delavallade, John M.,	1873

Thibodeaux.

Thibodeaux, Joseph G.,	1870

MAINE.

Augusta.

Partridge, Charles K.,	1867

Bangor.

Harlow, Noah Sparhawk,	1859
Patten, John F.,	1871

Eastport.

Shead, Edward E.,	1866

Lewiston.

Cook, John G.,	1859

Portland.

Cummings, Henry T.,	1853
Hay, Henry H.,	1867
Phillips, Walter F.,	1859

MARYLAND.

Baltimore.

Andrews, George W.,	1856
Baxley, J. Brown,	1856
Beam, Isaac R.,	1873
Brown, Alexander E.,	1863
Brown, William H.,	1863
Burrough, Edward Ewalt,	1869
Burrough, Horace,	1869
Caspari, William,	1856
Dannattel, George F.,	1867
Dohme, Charles E.,	1863
Dohme, Lewis,	1859
Donavin, Matthew W.,	1867
Elliott, Henry A.,	1859
Emich, Columbus V.,	1863
Frames, James P.,	1868
Gossman, Adam J.,	1870
Hancock, John Francis,	1863
Hancock, John Henry,	1870
Hassencamp, Ferdinand,	1872
Jefferson, John H. B.,	1868
Jennings, Nathaniel Hynson,	1857
Kirby, Thomas E.,	1863
Kleinschmidt, A. A.,	1873
Lauer, Michael J.,	1865

Lautenbach, Robert,	1870
Lilly, Alonzo, Jr.,	1863
Marion, Alfred N.,	1872
Mitnach, Henry,	1873
Monsarrat, Oscar,	1856
Moore, Jacob Faris,	1856
Morrison, S. Ellwood,	1863
Muth, John P.,	1864
Osburn, William H.,	1870
Perkins, Elisha H.,	1857
Potts, Jesse Newport,	1870
Roberts, Joseph,	1856
Russell, Eugene J.,	1856
Russell, E. Walton,	1863
Sappington, Richard,	1870
Sharp, Alpheus P.,	1855
Sheets, James Addison,	1870
Smith, Edward A.,	1870
Smith, J. Jacob,	1856
Suding, Henry A.,	1870
Sylvester, Samuel Retallack,	1858
Tilyard, Charles L.,	1867
Thompson, William S.,	1856
Thompson, William Partlow,	1874
Thomsen, John J.,	1856
Webb, John A.,	1870
Winkleman, John H.,	1864
Woodward, E.,	1874

Annapolis.

Button, Elijah,	1870

Hagerstown.

Winter, Jonas,	1863

MASSACHUSETTS.

Boston.

Atwood, Charles H.,	1856
Babo, Leopold,	1859
Bassett, Charles Harrison,	1867
Boyden, Ashel,	1853
Boyden, Edward Cleveland,	1874
Brown, Joseph Taylor,	1859
Brown, Joseph Taylor, Jr.,	1869
Brown, William,	1858
Burnett, Joseph,	1852
Burnham, George H.,	1871
Campbell, Isaac T.,	1859
Canning, Henry,	1865
Carter, Solomon,	1865
Colcord, Samuel Marshall,	1852
Colton, James B.,	1865
Cutler, Edward Waldo,	1859
Davidson, Frank A.,	1873
Doliber, Thomas,	1859
Doolittle, Erastus Hubbard,	1865
Drury, Linus Dana,	1871
Dyer, J. Howes,	1865
Eaton, Joseph I.,	1867
French, George Washington,	1865
Fowle, Henry D.,	1853
Gleeson, James Andrew,	1859
Gleeson, Michael H.,	1859
Henchman, Daniel,	1853
Hoagland, Pratt Ralph,	1868
Hollis, Thomas,	1853
Horton, William Francis,	1869
Jenkins, Luther L.,	1867
Kelly, Edward Samuel,	1871
Kent, Robert R.,	1855
Leary, Jeremiah Thomas,	1869
Littlefield, Alvah,	1856
Lowd, John Colby,	1871
Markoe, Geo. Frederick Holmes,	1863
Melvin, James S.,	1853
Metcalf, Theodore,	1857
Nowell, William F.,	1867
Parker, Joseph L.,	1864
Patch, Edgar Leonard,	1872
Patten, Ichabod Bartlett,	1858
Perry, Edward H.,	1865
Restieaux, Thomas,	1853
Ricker, George Dexter,	1858
Sheppard, Samuel A. D.,	1865
Smalley, Elijah,	1860
Talbot, James Stewart,	1873
Tompkins, Orlando,	1859
Tower, Levi, Jr.,	1860
Turner, T. Larkin,	1853
Underwood, Charles G.,	1865
Whall, Joseph Stokes,	1873
Wiley, Abraham S.,	1857
Wilkins, Daniel G.,	1865
Wilson, Benjamin Osgood,	1859
Woodbridge, George Washington,	1859

Andover.	
Parker, George W.,	1874
Brookline.	
Bird, George W.,	1867
Cambridge.	
Hubbard, John H.,	1866
James, Thomas P.,	1857
Cambridgeport.	
Arnold, George K.,	1871
Bayley, Augustus R.,	1859
Orne, Joel S.,	1859
Orne, Charles Parker,	1874
Thayer, Henry,	1858
Charlestown.	
Kettell, George P.,	1867
Stacey, Benjamin Franklin,	1860
Chelsea.	
Buck, John,	1855
Chicopee.	
Smith, Warren,	1874
Fall River.	
Redfearn, John,	1873
Great Barrington.	
Whiting, Frederick T.,	1863
Hingham.	
Hunt, James L.,	1865
Lincoln, Henry Ware,	1853
Holyoke.	
Wild, Joseph O.,	1873
Hudson.	
Safford, William Augustus,	1865
Lawrence.	
Whitney, Henry M.,	1859
Lee.	
Noyes, D. N.,	1873
Lowell.	
Bailey, Frederick,	1869
Butler, Freeman Hall,	1874
Hood, Charles I.,	1871
Kidder, Samuel, Jr.,	1859
Lynn.	
Proctor, Benjamin,	1859
Middleboro.	
Drake, Charles W.,	1873
New Bedford.	
Blake, James E.,	1866
Hadley, Frank R.,	1872
Lawton, Charles H.,	1873
Lawton, Horace A.,	1873
Newburyport.	
Goodwin, William W.,	1853
Smith, Samuel A.,	1859
North Adams.	
Griswold, William Henry,	1874
McDonald, William,	1873
North Andover.	
Berrian, George W., Jr.,	1857
Rockland.	
Estes, Joseph Joselyn,	1870
Rockport.	
Blatchford, Eben,	1857
Salem.	
Emerton, James,	1859
Springfield.	
Alder, Charles P.,	1874
Masters, T. Edward,	1873
Preston, Alfred J.,	1873
Webber, J. G.,	1873
Wilson, Howard E.,	1873
Worcester.	
Hazeltine, Charles Benjamin R.,	1867
McConville, Thomas A.,	1864
Scott, David,	1855
Scott, Nelson R.,	1859
MICHIGAN.	
Ann Arbor.	
Douglass, Samuel H.,	1869

Eberbach, Ottmar,	1869
Prescott, Albert B.,	1871

Battle Creek.

Wardell, Robert C.,	1860

Bay City.

Aldridge, George,	1872
Street, Job F.,	1869

Chelsea.

Glazier, George P.,	1863

Detroit.

Duffield, Samuel P.,	1859
Griffith, John H.,	1866
Johnston, William,	1860
Ronnefeld, Theodore,	1866
Vernor, James,	1866

East Saginaw.

Dunk, Alfred A.,	1867
Garrigues, Samuel S.,	1855
Melchers, Henry,	1869
Simoneau, Leander,	1869

Jackson.

Meseroll, James C.,	1867
Weeks, Eugene J.,	1866

Kalamazoo.

MacDonald, George,	1871

Muskegon.

Wagener, Samuel H.,	1869

Pentwater.

Jesson, Jacob,	1872

Saginaw City.

Keeler, William H.,	1872
Moll, William,	1869

Schoolcraft.

James, George R.,	1869

MINNESOTA.

Duluth.

Eyster, Christopher Edward,	1871

Mankato.

Austin, George W.,	1865

Minneapolis.

Savory, George Augustus,	1869

St. Paul.

Sweeney, Robert Ormsby,	1866

MISSISSIPPI.

Columbus.

Osborne, Hampden,	1869

Jackson.

Ash, Matthew F.,	1856
Buck, John T.,	1868

MISSOURI.

St. Louis.

Alexander, Maurice W.,	1871
Ayers, James M.,	1872
Bang, Charles,	1871
Blake, Amos R.,	1871
Blank, Alois,	1871
Blickhahn, George F.,	1871
Boehm, Solomon,	1871
Catlin, Ephron,	1871
Catlin, Theron,	1871
Chamberlain, Guilford T.,	1853
Chase, Charles D.,	1872
Connor, James F.,	1871
Crawford, William Harper,	1864
Crawley, Francis Xavier,	1869
Curtman, Charles O.,	1871
D'Amour, Otto,	1871
Glenn, Thomas Smith,	1870
Good, James M.,	1871
Grandjean, Charles,	1871
Grandjean, Eugene,	1871
Grant, William R.,	1871
Guerdan, John,	1871
Hensel, Samuel T.,	1872
Hollister, Arthur P.,	1871
Jones, Charles Kendall,	1867
Kalb, Theodore,	1864
Kirkbride, Joseph Cooper,	1869
Kovacs, Martin,	1871
Krebs, Hugo,	1871
Leitch Arthur,	1860

Maddock, William L.,	1871
Mallinckrodt, Gustavus,	1869
Mallinckrodt, Edward,	1869
Meyer, Christian F. G.,	1860
O'Gallagher, James,	1858
Physick, Henry Sanford,	1870
Primm, Hubert,	1855
Randals, Evermont,	1865
Richardson, J. Clifford,	1871
Sander, Enno,	1858
Scheffer, Henry W.,	1863
Scholz, Philip,	1871
Sennewald, Ferdinand William,	1865
Steer, Justin,	1869
Ude, George,	1871
Vardick, August H.,	1874
Witte, L. Edward,	1871

Chillicothe.

Boyce, S. F.,	1871

Hannibal.

Orynski, L.,	1871

Kansas City.

Baker, E. F.,	1871
Brackett, Aurick S.,	1868
Breunert, Augustus,	1868
French, Paul F.,	1871
Lyon, George P.,	1871
Mann, Albert H.,	1869
Schultz, Frederick William,	1871

Macon.

Field, Amos,	1871

Mexico, Adrian Co.

Llewellyn, John Frederick,	1867

Trenton, Grundy Co.

Featherston'h, Edward R.,	1871

Weston.

Parr, John C.,	1856

NEBRASKA.

Omaha.

Goodman, Charles F.,	1871

NEVADA.

Aurora.

Baldwin, Charles Edgar,	1871
Green, Alexander Alfred,	1868

NEW HAMPSHIRE.

Allentown.

Hildreth, Charles F. P.,	1874

Concord.

Eastman, Charles S.,	1874
Foster, Henry B.,	1874
Morgan, James,	1859
Underhill, George Francis,	1874

Dover.

Pinkham, Alonzo Taylor,	1874
Rackley, Benjamin Franklin,	1874
Tufts, Charles Augustus,	1856
Vickery, William Henry,	1874

Exeter.

Merrill, Charles A.,	1858

Keene.

Appleton, George J.,	1873
Dort, Oliver Gilman,	1858

Lancaster.

Noyes, Parker Jewett,	1874

Manchester.

Jones, Charles Mortimer,	1869
Littlefield, Chauncey B.,	1868

New Market.

Dearborn, George L.,	1853

Portsmouth.

Thacher, Joseph Haven,	1859
Whipple, Napoleon Dana,	1871

Somersworth.

Moore, George,	1859

NEW JERSEY.

Basking Ridge.

Muchmore, William Fletcher,	1868

Burlington.

Vandegrift, John A.,	1867

Camden.

Brown, Albert P.,	1870
De la Cour, Joseph L.,	1870
Test, Alfred W.,	1870

Elizabeth.

Barnaby, Thomas J.,	1870

Elizabethport.

Frohwein, Richard,	1867

Englewood.

Morris, P. H.,	1871

Hoboken.

Fehr, Julius,	1870

Jersey City.

Abernethy, Maxwell,	1865
Carman, George E.,	1872
Kirsten, Adolph,	1867
Laird, William R.,	1867
Mercein, James R.,	1865
Phillips, George W. C.,	1871
Sherman, Oliver G.,	1869
White, George H.,	1868

Moorestown.

Worthington, J. Willits,	1873

Morristown.

Dalrymple, Charles H.,	1860
McCarty, William,	1873
Voorhees, William S.,	1868

Mount Holly.

Miller, Louis,	1874
White, Aaron Smith,	1860

Newark.

Badger, Charles W.,	1870
Dreher, Ernest,	1869
Havenstein, Alexander,	1870
Holzhauer, Charles,	1873
Jacques, Isaac W.,	1869
Lee, John B.,	1870
Littell, William M.,	1870
Mills, Andrew M.,	1872
Nichols, Edward Payson,	1870
Peters, Alexander C.,	1868
Smith, Charles B.,	1868
Vandervoord, Ransford Wells,	1870
Van Gieson, Theron W.,	1869
Van Winkle, Abraham,	1871

New Brunswick.

Rust, William,	1870

Orange.

Harlow, Wickham N.,	1874

Plainfield.

Vorhees, William H.,	1868

South Amboy.

Jacques, George W.,	1869

Trenton.

Rickey, Randal,	1870

NEW MEXICO.

Sante Fé.

Krummeck, Jacob,	1867

NEW YORK.

New York City.

Atwood, Hermon W.,	1873
Balluff, Paul,	1860
Bedford, Peter Wendover,	1859
Billings, Henry M.,	1869
Brewer, William A.,	1853
Buehler, Edward H.,	1874
Carle, John, Jr.,	1860
Cassebeer, Henry A.,	1858
Cassebeer, Henry A., Jr.,	1872
Chandler, Charles F.,	1867
Close, Eldridge W.,	1874
Cole, Theodore,	1873
Creuse, Jules L. A.,	1871
Currie, John H.,	1858
Davis, Benjamin,	1869
Day, Walter De Forest,	1873
Dege, George F.,	1868
Ditman, Andrew J.,	1868
Dung, Albert C.,	1872
Eimer, Charles,	1872
Faber, John,	1857
Falke, William,	1874
Fisher, William,	1862

Fraser, Edward A.,	1873
Frey, John,	1865
Fougera, Edmund C.,	1867
Frohwein, Max,	1865
Frohwein, Theobald,	1862
Gardiner, Warren B.,	1860
Gilmore, John W.,	1867
Gellatly, William A.,	1858
Goecke, Augustus Gottfried,	1867
Green, Thomas T.,	1858
Gridley, Junius,	1853
Griffith, William H.,	1874
Hale, Frederick,	1855
Haviland, Henry,	1857
Hays, David,	1867
Hebberling, Gottfried,	1867
Hegeman, William,	1858
Higgins, James S.,	1862
Hoffmann, Frederick,	1867
Hohenthal, Charles F. L.,	1865
Hudnut, Alexander,	1857
Imhof, Henry,	1872
Johnson, Edward L.,	1860
Kiersted, Henry T.,	1856
Kimmel, Henry,	1867
Krehbiel, Gustavus,	1865
Kuhles, Philip,	1873
Lazell, Lewis T.,	1858
Lehlbach, Paul Frederick,	1872
Lehn, Louis,	1874
Macmahan, Thomas Jackson,	1871
Main, Thomas F.,	1872
Marsh, Edward H.,	1858
McElhenie, Thomas D.,	1872
McIntyre, Ewen,	1873
McKesson, John, Jr.,	1867
Milhau, Edward L.,	1858
Molwitz, Ernest,	1867
Neergaard, William,	1859
Osmun, Charles A.,	1868
Peixotto, Moses L. M.,	1869
Pfingsten, Gustavus,	1873
Porter, George G.,	1860
Ramsperger, Gustavus,	1860
Raser, William H.,	1869
Reichard, F. Alfred,	1871
Reinold, Bernard H.,	1861
Rice, Charles,	1870
Robbins, Daniel C.,	1862
Royce, Lucien M.,	1866
Sands, George G.,	1867
Schmid, Henry,	1874
Schofield, James L.,	1867
Seward, Daniel W.,	1874
Shedden, John W.,	1859
Sheils, George E.,	1860
Skelley, James T.,	1866
Starr, Thomas,	1870
Stein, Gottlieb,	1871
Tully, Andrew,	1862
Weaver, James,	1860
Weinman, Oscar C.,	1873
Weismann, Augustus W.,	1869
Wenck, George J.,	1869
Westerfield, Joseph H.,	1858
Wheeler, Lucian F.,	1858
White, Philip A.,	1872
Wickham, William Hull,	1870
Wright, William, Jr.,	1859

Brooklyn.

Althans, Charles A.,	1873
Barnaby, James Otis,	1870
Bassett, Francis M.,	1860
Chadwick, A.,	1872
Close, George C.,	1858
Connor, Thomas J.,	1867
Curtiss, Charles Grenville,	1866
Day, Carlos E.,	1870
Daycock, William Henry,	1874
Dunn, John A.,	1867
Dupuy, Eugene,	1852
Harner, James M.,	1867
Heydenreich, Emil,	1867
Heydenreich, F. Victor,	1860
Jones, Thomas,	1868
Kitchen, Charles W.,	1865
Lawlor, Charles J.,	1874
Lewis, Thomas,	1867
Livingstone, B. V. B.,	1872
Menninger, Henry J.,	1866
Newman, George A.,	1865
Niebrugge, John H.,	1861
Nietsch, Adolph J. W.,	1872

Ollif, James H.,	1867
Owens, Richard J.,	1860
Peduzzi, George S.,	1861
Pyle, Cyrus,	1859
Snyder, Ambrose C.,	1867
Squibb, Edward R.,	1858
Tartiss, Alfred J.,	1867
Vincent, William,	1870
Wynn, William,	1867

Albany.

Cutler, John N.,	1870

Angola, Erie Co.

Oatman, Le Roy S.,	1872

Buffalo.

King, Alexander,	1874
Peabody, William H.,	1857
Rano, Charles O.,	1866
Tibbs, William H.,	1871

Elmira.

Bidwell, Marshall Spring,	1871

Fishkill, on Hudson.

Moith, Augustus Theodore,	1860

Flushing.

Hepburn, John,	1873

Gloversville.

Searles, William C.,	1872

Luzerne, Warren Co.

Miller, George Y.,	1872

Middletown.

King, James T.,	1859
Rogers, William H.,	1869

Mount Vernon.

Gill, George,	1872
Peck, Anley W.,	1874

New Lebanon.

Tilden, Henry A.,	1858

Plattsburgh.

Cady, Hiram Walworth,	1870

Port Jervis.

Cook, George L.,	1872
McDougall, James,	1874

Potsdam.

Thatcher, Hervey D.,	1865

Poughkeepsie.

Sherwood, Hezekiah S.,	1870

Rochester.

Haas, George Hermann,	1872
Lane, Alfred S.,	1857

Rondout.

Laycock, Washington,	1857

Sag Harbor.

Lobstein, J. F. Daniel,	1868

Sand Bank.

Belden, James L.,	1874
Kelley, Edward F.,	1870

Saratoga Springs.

Fish, Charles F.,	1866
Fish, George H.,	1869
Lamberton, J. F.,	1872
Mingay, James,	1873

Syracuse.

Chamberlain, Humphrey Barker,	1874

Tarrytown, Westchester Co.

Alsdorf, John,	1872

Utica.

Ballard, George S.,	1874
Howarth, John W.,	1874

West Farms.

Webb, Henry E.,	1865

Whitestown.

Gardner, Robert M.,	1872

Yonkers.

Stephens, William G.,	1860
Toplis, Robert J.,	1863

NORTH CAROLINA.

Chapel Hill.

Saunders, Richard B.,	1858

Raleigh.

Lee, Addison Sherwin,	1873
Simpson, William,	1873

Washington.

Gallagher, Charles K.,	1857

OHIO.

Cincinnati.

Adderly, William H.,	1854
Archibald, Henry C.,	1867
Aarons, William C.,	1854
Callender, George E.,	1873
Crawford, John S.,	1868
Eger, George,	1864
Feemster, Joseph H.,	1873
Fennel, Adolphus,	1864
Foertmyer, Adolphus W.,	1864
Fratz, John G.,	1864
Gordon, William J. M.,	1854
Greve, Theodore L. A.,	1864
Heineman, Otto,	1864
Helman, Charles M.,	1864
Hill, Alfred C.,	1864
Hill, Hiram H.,	1864
Hottendorf, Augustus,	1864
Judge, John F.,	1866
Karrmann, William,	1864
Keeshan, John,	1864
Lloyd, John Uri,	1870
Markward, James,	1864
Merrell, William S.,	1854
Reinlein, Paul,	1856
Reum, Hermann F.,	1864
Wayne, Edward S.,	1854
Wells, Jacob David,	1864
Yorston, Matthew M.,	1864

Alliance.

Barr, Peter H.,	1867

Ashland.

Foltz, William K.,	1872

Bryan.

Snyder, Alva L.,	1873

Canton.

Geiger, Conrad John,	1866
Geiger, Walter P.,	1867

Circleville.

Fickardt, George H.,	1864

Cleveland.

Bock, August W.,	1872
Gaylord, Henry C.,	1869
Hartness, William H.,	1872
Huling, Bruce,	1872
Mayell, Alfred,	1872
Moore, James Penn,	1872
Scott, William J.,	1872
Spenzer, Peter J.,	1872
Vaupel, Charles P.,	1872

Columbus.

Boyd, Abraham,	1869
Huston, Charles,	1872
Matt, Joseph,	1872
Ritson, Alfred,	1870
Roberts, John S.,	1872

Elyria.

Hill, Frank P.,	1872

Ironton.

Ball, Theophilus B.,	1874

Logan.

Harrington, Frank,	1869

Middletown.

Hatfield, Vermont,	1874

Navarre.

Garver, Alexander,	1866
Grossklaus, John F.,	1859

Salem, Columbiana Co.

Hawkins, M. Smith,	1870

Shreve.

Bertolett, William J.,	1872

South Charlestown.

Allen, Alexander B.,	1869

Springfield.

Casper, Thomas J.,	1867
Ludlow, Charles,	1872
Smith, Charles G.,	1874

Toledo.

Daniels, Thomas,	1866
Hohly, C.,	1872

Wooster.

Ohliger, Lewis P.,	1871

Youngstown.

Neal, Leander,	1858

OREGON.

Portland.

Hodge, Charles,	1859

PENNSYLVANIA.

Philadelphia.

Abell, Walter B.,	1867
Angney, John R.,	1867
Bakes, William C.,	1864
Bauer, Louis G.,	1867
Blair, Andrew,	1865
Blair, Henry C.,	1868
Blinkhorn, George,	1860
Borell, Henry Augustus,	1874
Boring, Edwin McC.,	1867
Bossler, David J.,	1873
Bower, Henry,	1860
Bower, Henry A.,	1868
Bullock, Charles,	1857
Bunting, Samuel S.,	1857
Burk, William B.,	1873
Caldwell, James Marshall,	1866
Campbell, Samuel,	1864
Carpenter, George W.,	1873
Chapman, Samuel,	1857
Chipman, Edward D.,	1872
Coombe, Thomas R.,	1860
Cramer, Henry,	1867
Dobbins, Edward T.,	1867
Eberle, Charles L.,	1865
Eddy, Henry C.,	1869
Eldridge, George W.,	1865
Ellis, Evan T.,	1857
England, Robert,	1868
Erben, John S.,	1868
Evans, William, Jr.,	1860
Fox, Peter P.,	1869
Gerhard, Samuel,	1873
Grahame, Israel J.,	1856
Grove, John E.,	1868
Haenchen, Charles Eugene,	1865
Hance, Edward H.,	1857
Hancock, Charles West,	1868
Hassard, Peter J.,	1853
Hazard, Thomas H.,	1870
Heintzelman, Joseph A.,	1858
Hurst, John C.,	1868
Jefferson, Charles L.,	1869
Jenks, William J.,	1858
Johnson, Benjamin F.,	1859
Jones, Alexander H.,	1874
Jones, Daniel S.,	1859
Jones, Edward C.,	1864
Jones, Samuel T.,	1867
Kay, Isaac H.,	1870
Keasbey, H. G.,	1873
Keeney, Caleb R.,	1868
Keys, Roger,	1868
Koch, Louis,	1872
Lancaster, Thomas A.,	1859
Lippincott, Henry B.,	1868
Maisch, John M.,	1856
Mattison, Richard V.,	1873
McIntyre, William,	1868
McKelway, George Irvin,	1874
Mellor, Alfred,	1864
Miller, Adolphus W.,	1868
Milligan, Decatur,	1867
Mitchell, Charles L.,	1874
Moore, Joachim Bonaparte,	1860
Needles, Caleb H.,	1868
Parrish, Clemmons,	1868
Parrish, Dillwyn,	1857
Perot, T. Morris,	1857
Pile, Wilson H.,	1857
Power, Frederick B.,	1872
Preston, David,	1868
Procter, Wallace,	1874
Remington, Joseph P.,	1867
Riley, Charles W.,	1868

Rittenhouse, Henry N.,	1857
Robbins, Alonzo,	1865
Roche, Edward Manning,	1868
Roche, William Ford,	1868
Rosengarten, Mitchell G.,	1869
Scattergood, George J.,	1860
Selfridge, Matthew M.,	1858
Shivers, Charles,	1860
Shinn, James T.,	1860
Shoemaker, George Y.,	1862
Shoemaker, Joseph L.,	1867
Shoemaker, Richard M.,	1869
Shryock, Allen,	1868
Simpers, J. Wilmer,	1874
Snowdon, George M.,	1857
Souder, Joseph A.,	1870
Spannagel, Charles C.,	1874
Taylor, Alfred B.,	1852
Thompson, William B.,	1858
Tilge, Frederick A.,	1868
Troth, Samuel F.,	1857
Vogelbach, Hermann A.,	1868
Warner, William R.,	1857
Weaver, J. Thornton,	1868
Webb, William H.,	1867
Weber, William,	1872
Weidemann, Charles A.,	1868
Wendel, Henry Edward,	1873
Wiegand, Thomas S.,	1857
Wilder, Hans M.,	1866
Wilson, Adam H.,	1859
Wright, Archibald W.,	1868

Allegheny City.

Brill, William H.,	1872
Eggers, Frederick H.,	1872
Lutz, Harrison S.,	1872

Bethlehem.

Luckenback, Edward H.,	1870
Meyers, Edward T.,	1867
Rau, Eugene A.,	1870

Chambersburg.

Cressler, Charles H.,	1868
Heyser, William, Jr.,	1856

Columbia.

Jackson, James M.,	1874
Meyers, James A.,	1867

Danville.

Von Nieda, John W.,	1868

Easton.

Weaver, John A.,	1873

Erie.

Nick, Hermann Charles,	1869
Nick, William Frederick, Jr.,	1869

Harrisburg.

Egle, William H.,	1870
George, Charles T.,	1873
Miller, Jacob A.,	1873

Lancaster.

Heinitsh, Charles A.,	1857
Hubley, Alfred A.,	1870

Lebanon.

Lemberger, Joseph L.,	1858

Mansfield, Allegheny Co.

Christy, Robert,	1871

Meadville.

Sorensen, Sophus,	1872

New Castle.

Cubbison, James M.,	1873

Oil City.

Griffith, Albert R.,	1870

Pittsburg.

Abel, Joseph,	1864
Caldwell, Joseph F.,	1872
Cherry, James B.,	1868
Hostetter, Charles M.,	1870
Mattern, John C.,	1860
Ottinger, Franklin,	1871
Rankin, Alfred J.,	1864

Pottstown.

Cunningham, John M.,	1867

Pottsville.

Kennedy, George W.,	1869

Quakertown.

Penrose, Stephen F.,	1871

Reading.

Raser, John B.,	1872
Stein, Jacob H.,	1869
Ziegler, Philip Milton,	1867

Towanda.

Porter, Henry C.,	1869

Wilkesbarre.

Holmes, Clay W.,	1873
Tener, Richard, Jr.,	1863

Williamsport.

Cornell, Edward A.,	1873
Duble, Jesse Balderston,	1870

York.

Smith, William,	1873

RHODE ISLAND.

East Greenwich.

Congdon, Albert J.,	1860

Newport.

Blackman, Lyman R.,	1865

Providence.

Calder, Albert L.,	1859

Westerly.

Lattimer, Robert F.,	1857

SOUTH CAROLINA.

Charleston.

Aimar, George Washington,	1874
Burnham, Edward S.,	1874
Eckel, Augustus W.,	1874
Frampton, Lingard A.,	1874
Gibson, William A.,	1874
Luhn, Gustavus J.,	1873
Michaelis, Charles Otto,	1874
Pauknin, Charles F.,	1874

TENNESSEE.

Bolivar.

Larwill, Joseph H., Jr.,	1858

Knoxville.

Albers, George W.,	1872

Memphis.

Hampson, Hugh H.,	1869
Hoerner, Theodore,	1871
Robinson, James S.,	1869
Steever, Henry C.,	1865

Nashville.

Ewing, William G.,	1872
Laurent, Eugene L.,	1872
Lillard, Benjamin,	1869
Wharton, J. C.,	1872

TEXAS.

Dallas.

Connor, L. Myers,	1874

Galveston.

Powell, Thomas W.,	1874

UTAH.

Salt Lake City.

Perkins, William Alexander,	1869

VERMONT.

Brandon.

Crossman, George A.,	1872

Rutland.

Higgins, Albert W.,	1870
Lewis, Elam C.,	1870

Springfield.

Warren, Charles Henry,	1872

VIRGINIA.

Alexandria.

Lunt, Samuel H.,	1873
Stabler, Richard H.,	1856

Fredericksburg.

Hall, Marshall C.,	1870

Harrisonburg.

Avis, James L.,	1873

Lynchburg.

Strother, William A.,	1874

Norfolk.

Burrow, John W.,	1873
Masi, Frederick H.,	1873
Smith, John W.,	1873
Taylor, William A. S.,	1873

Petersburg.

Goodwyn, John W.,	1873

Richmond.

Anthony, Joseph,	1873
Baker, Thomas Roberts,	1873
Blunt, Ira W.,	1873
Bodeker, Henry,	1873
Conrad, William A. S.,	1873
Dupuy, Powhatan E.,	1873
Farrar, Samuel Wesley,	1873
Fischer, H. Emil,	1873
Meade, Richard H.,	1873
Nesbitt, C. A.,	1873
Nolting, Adolphus W.,	1870
Scott, A. A.,	1873
Scott, William H.,	1873
Wagner, Louis,	1873
Willis, Joseph N.,	1873
Wood, Robert B.,	1873

WEST VIRGINIA.

Charlestown.

Boggs, Edwin L.,	1872

Wheeling.

Bocking, Edmund,	1874
Finney, Thomas J.,	1874

WISCONSIN.

Beloit.

Collins, Charles Frederick Gove,	1859

Fond du Lac.

Curren, Edward S.,	1869

Janesville.

Heimstreet, Edward Burton,	1874

Maxomanie.

Senier, Alfred,	1869
Senier, Alfred, Jr.,	1874
Senier, Frederick S.,	1874

Milwaukee.

Drake, John R.,	1860

DOMINION OF CANADA.

QUEBEC.

Montreal.

Gray, Henry R.,	1867
Mercer, Nathan,	1867

ONTARIO.

Caledonia.

Walker, John A.,	1873

Guelph.

Petrie, Alexander Bain,	1867

London.

Saunders, William,	1860

Stratford.

Waugh, George W.,	1862

Toronto.

Rose, Henry J.,	1872

WEST INDIES.

BERMUDA.

Hamilton.

Heyl, James B.,	1863

CUBA.

Cardenas.

Cahill, John F.,	1870

U. S. OF COLOMBIA.

Panama.

Herbruger, Florence C.,	1867

NICARAGUA.

Granada.

Guzman, Horace,	1871

LIST OF DECEASED MEMBERS.

HONORARY MEMBERS.

		Elected.	Died
Bache, Franklin, M.D.,	Philadelphia, Pa.,	1857,	1864
Boullay, Pierre François Guillaume,	Paris, France,	1868,	1869
Casselmann, Arthur, Ph.D ,	St. Petersburg, Russia,	1868,	1872
Deane, Henry,	London, England,	1868,	1874
Durand, Elias,	Philadelphia, Pa.,	1857,	1873
Farrington, Thomas,	Boston, Mass.,	1856,	1867
Ludwig, Hermann, Ph.D.,	Jena, Germany,	1871,	1873
Robinet, Stephane,	Paris, France,	1868,	1869

ACTIVE MEMBERS.

		Elected.	Died.
Anderson, James H.,	New York, N. Y.,	1859,	1866
Aspinwall, James S.,	New York, N. Y.,	1855,	1874
Bache, Charles L.,	San Francisco, Cal.,	1852,	1854
Backus, James W.,	Marine City, Mich.,	1867,	1870
Balmer, James,	Baltimore, Md.,	1856,	1866
Barry, John W.,	Baltimore, Md.,	1856,	1861
Baylis, William E. P.,	Brooklyn, N. Y.,	1860,	1872
Baynon, John,	Shreveport, La.,	1858,	1862
Benzinger, John Sylvester,	Baltimore, Md.,	1860,	1869
Bigelow, Francis O.,	Medford, Mass.,	1859,	1863
Billings, Samuel J.,	New York, N. Y.,	1860,	1865
Bingham, John C.,	St. Johnsbury, Vt.,	1853,	1870
Blair, Henry C.,	Philadelphia, Pa.,	1855,	1862
Blauw, Hippolyt A.,	Rochester, N. Y.,	1856,	1870
Bowman, Henry K.,	Philadelphia, Pa.,	1869,	1873
Bright, James Evesson,	Worcester, Mass.,	1868,	1872
Bringhurst, Ferris,	Wilmington, Del.,	1862,	1871
Brown, John T.,	Boston, Mass.,	1859,	1860
Canavan, Benjamin,	New York, N. Y.,	1855,	1857
Carney, Charles Tibbetts,	Boston, Mass.,	1853,	1862
Caspari, Charles,	Baltimore, Md.,	1856,	1870
Chapman, William B.,	Cincinnati, Ohio,	1852,	1874
Churchill, George W.,	Chelsea, Mass.,	1865,	1869

		Elected.	Died.
Clency, William F.,	Cincinnati, Ohio,	1859,	1865
Coddington, Isaac,	New York, N. Y.,	1855,	1874
Colby, Moses D.,	Boston, Mass.,	1859,	1870
Coon, Walter S.,	New York, N. Y.,	1858,	1861
Coppuck Peter V.,	Mount Holly, N. J.,	1857,	1869
Cressman, Noah,	Waterloo, Canada West,	1863,	1864
Cunningham, James E.,	Pittsburg, Pa.,	1860,	1863
Cushman, Alexander,	New York, N. Y.,	1858,	1861
Davies, Robert J.,	Brooklyn, N. Y.,	1858,	1872
De Motte, Henry A.,	Jersey City, N. J.,	1871,	1873
D'Evers, Henry Gaston,	Chicago, Ill.,	1865,	1870
Dodge, John P.,	New York, N. Y.,	1855,	1863
Easterbrook, Ray B.,	New York, N. Y.,	1858,	1868
Ellis, Charles (Pres. 1857–58),	Philadelphia, Pa.,	1852,	1873
Emanuel, Louis M., M.D.,	Linwood, Pa.,	1857,	1868
Everson, John C.,	Philadelphia, Pa.,	1863,	1872
Fish, George B.,	Saratoga Springs, N. Y.,	1860,	1866
Fish, Henry F.,	New York, N. Y.,	1852,	1868
Forester, Richard,	Brooklyn, N. Y.,	1860,	1862
Fulton, John Culpepper P.,	Brooklyn, N. Y.,	1873,	1874
Gabaudan, Arthur W.,	New York, N. Y.,	1862,	1870
Gay, William,	Cambridgeport, Mass.,	1858,	1862
Gerhard, John C.,	Cincinnati, Ohio,	1862,	1866
Geyer, Andrew,	Boston, Mass.,	1853,	1855
Graefle, Frederick Alexander,	Baltimore, Md.,	1870,	1873
Groneweg, Louis,	Cincinnati, Ohio,	1864,	1866
Harbaugh, Valentine,	Washington, D. C.,	1856,	1871
Hegeman, Frederick Augustus,	New York, N. Y.,	1855,	1860
Hensch, Hugo,	Cleveland, Ohio,	1872,	1873
Hendel, Samuel D.,	St. Louis, Mo.,	1858,	1871
Hill, Henry E.,	Detroit, Mich.,	1866,	1868
Jardella, Jerome B.,	Vincennes, Ind.,	1865,	1870
Jenkins, William Ellis,	Boston, Mass.,	1865,	1869
John, Frederick L.,	Philadelphia, Pa.,	1856,	1864
Johnston, Charles P.,	Memphis, Tenn.,	1868,	1873
Junghanns, Charles A.,	Cincinnati, O.,	1858,	1862
Keffer, Frederick A., M.D.,	New Orleans, La.,	1862,	1873
Kennedy, Robert C.,	Cleveland, O.,	1865,	1868
Kent, Asbury,	Cincinnati, O.,	1854,	1860
Kent, William,	Cincinnati, O.,	1864,	1867
Kidder, Darius B.,	Boston, Mass.,	1858,	1874
King, Henry,	New York, N. Y.,	1858,	1867
Knapp, Edwin E.,	Norwalk, Conn.,	1860,	1862
Laidley, Joseph,	Richmond, Va.,	1852,	1861
Lane, James B.,	Fitchburg, Mass.,	1856,	1867
Leitch, Alexander,	St. Louis, Mo.,	1858,	1868
Lineaweaver, Kline Cyrus,	Washington, D. C.,	1864,	1873

		Elected.	Died.
Little, William B.,	Panama, U. S. Colombia,	1857,	1867
Longshaw, William, Jr., M.D.,	Bayou Sara, La.,	1858,	1864
Lyon, Charles H., Jr.,	Boston, Mass.,	1858,	1871
McBride, James,	St. Louis, Mo.,	1864,	1871
McConville, Michael S.,	Worcester, Mass.,	1859,	1873
McDonald, John,	Brooklyn, N. Y.,	1860,	1861
McIntyre, Timothy C., M.D.,	Washington, D. C.,	1858,	1862
McPherson, George B.,	Cincinnati, O.,	1867,	1871
Massot, Eugene L.,	St. Louis, Mo.,	1857,	1871
Maxwell, James T.,	New York, N. Y.,	1855,	1860
Mayer, Ferdinand F.,	New York, N. Y.,	1859,	1869
Meakim, John (Pres. 1855–56),	New York, N. Y.,	1852,	1863
Metcalf, Tristram W.,	Brooklyn, N. Y.,	1857,	1873
Melzar Augustus P.,	Wakefield, Mass.,	1856,	1874
Milhau, John (Pres. 1867–68),	New York, N. Y.,	1855,	1874
Muller, William H.,	Chicago, Ill.,	1865,	1870
Nagle, John G.,	Baltimore, Md.,	1863,	1869
Nadand, James W.,	Cincinnati, O.,	1864,	1868
Norgrave, Samuel K.,	Pittsburg, Pa.,	1857,	1871
Olliffe, William J., M.D.,	New York, N. Y.,	1858,	1866
O'Brien, Joseph C.,	Baltimore, Md.,	1863,	1873
Osgood, Samuel W.,	Davenport, Iowa,	1858,	1860
Palmer, Albert G.,	Washington, D. C.,	1858,	1860
Parker, Herschel,	Brooklyn, N. Y.,	1867,	1870
Parrish, Edward (Pres. 1868–69),	Philadelphia, Pa.,	1852,	1872
Peck, Samuel P.,	Bennington, Vt.,	1853,	1859
Pettis, Newton C.,	North Adams, Mass.,	1868,	1874
Philbrick, Samuel R., M.D.,	Boston, Mass.,	1852,	1859
Phillips, Llewellyn,	Baltimore, Md.,	1856,	1865
Platzer, Robert,	Philadelphia, Pa.,	1865,	1874
Polhemus, James L.,	Sacramento, Cal.,	1866,	1867
Pollard, Charles P.,	Marysville, Cal.,	1859,	1869
Procter, William, Jr. (Pres. 1862–63),	Philadelphia, Pa.,	1852,	1874
Pyle, J. Lindley,	Brooklyn, N. Y.,	1859,	1866
Rehfuss, Lewis,	Cincinnati, O.,	1854,	1856
Reifsnider, William E.,	Baltimore, Md.,	1864,	1872
Roberts, David,	Boston, Mass.,	1858,	1863
Rollman, Frederick,	Philadelphia, Pa.,	1862,	1864
Roemer, Daniel,	Cincinnati, O.,	1865,	1870
Sands, Jesse M.,	New York, N. Y.,	1860,	1867
Scott, John,	Cincinnati, O.,	1854,	1873
Scully, Harmar D.,	Pittsburg, Pa.,	1858,	1866
Smith, Charles Augustus,	Cincinnati, O.,	1852,	1862
Smith, Edwin R.,	Monmouth, Ill.,	1862,	1869
Squire, William H.,	Germantown, Pa.,	1862,	1865
Steiner, Henry,	Philadelphia, Pa.,	1857,	1858
Stevens, Ashbel Mead,	Cincinnati, O.,	1854,	1860

		Elected.	Died.
Stevens, Rufus Walker,	Somersworth, N. H.,	1859,	1868
Sweetser, Thomas Augustus,	South Danvers, Mass.,	1859,	1860
Taylor, Robert J.,	Newport, R. I.,	1859,	1871
Taylor, William,	Philadelphia, Pa.,	1868,	1871
Thomas, William,	Jersey City, N. J.,	1855,	1856
Uhl, Charles,	Memphis, Tenn.,	1860,	1873
Waite, Samuel B.,	Washington, D. C.,	1858,	1862
Warren, William,	Brighton, Mass.,	1867,	1871
Watson, William J.,	Brooklyn, N. Y.,	1853,	1872
Weyman, George W., Ph.D.,	Pittsburg, Pa.,	1858,	1864
White, Daniel F.,	Charlestown, Mass.,	1859,	1864
White, William P.,	Chicago, Ill.,	1865,	1866
Whitehead, Silas,	Lynchburg, Va.,	1856,	1858
Wilson, George C.,	Boston, Mass.,	1859,	1861
Wiseman, Charles,	Baltimore, Md.,	1856,	1862
Witzell, Louis,	Cincinnati, O.,	1864,	1867
Wood, G. Davidge,	Baltimore, Md.,	1856,	1863
Woods, Samuel H.,	Boston, Mass.,	1859,	1869
Wright, George,	New York, N. Y.,	1869,	1873

LIST OF RESIGNATIONS.

Names.	Residence.	Elected.
Allinson, William J.,‡	Burlington, N. J.,	1862
Blossom, William A.,†	Boston, Mass.,	1871
Borhek, James T., Jr.,†	Bethlehem, Pa.,	1867
Bryan, Alexander B.,§	Chicago, Ill.,	1865
Campbell, John B. H.,†	Cumberland, Md.,	1870
Carson, Edwin S.,§	Memphis, Tenn.,	1871
Green, Francis P.,‡	Bellefonte, Pa.,	1864
Heylman, Charles,§	Chicago, Ill.,	1865
Hubbell, Orange S.,†	Philadelphia, Pa.,	1857
Jones, Pleasant R.,*	Danville, Pa.,	1873
Krause, William,§	Philadelphia, Pa.,	1870
Matos, Lewis A.,*	Philadelphia, Pa.,	1872
McCollin, Samuel M.,§	Philadelphia, Pa.,	1864
Morse, Henry C.,‡	Elmira, N. Y.,	1868
Myers, Daniel,§	Cleveland, O.,	1872
Seegar, Roland,§	Philadelphia, Pa.,	1868
Sands, Robert A.,§	New York, N. Y.,	1858
Southwick, George W.,†	New York, N. Y.,	1860
Tappan, Charles E.,‡	Boston, Mass.,	1871
Weiss, Julius,†	Munroe, Mich.,	1866
Wouldhave, Thomas,‡	Maynard, Mass.,	1871

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* Inability to attend the meetings.
† Left the business.
‡ Obliged from ill health to give up business.
§ No reason given.

LIST OF MEMBERS DROPPED FROM THE ROLL.

Names.	Residence.	Elected.
Adams, Charles S.,	Baltimore, Md.,	1873
Ahl, Charles L.,	Allegheny City, Pa.,	1872
Allison, James W.,	St. Charles, Mo.,	1871
Anderson, Joseph E.,	Mare Island, Cal.,	1869
Bennett, Charles H.,	Le Mars, Iowa,	1869
Bennett, William R.,	Unknown,	1871
Benson, Henry T.,	Washington, D. C.,	1872
Berghausen, Edward,	Cincinnati, O.,	1864
Bigelow, Edmund,	Springfield, Mass.,	1860
Blake, James W.,	Visalia, Cal.,	1869
Blatchford, Eben, Jr.,	Rockport, Mass.,	1865
Bliss, Sylvester S.,	Chicago, Ill.,	1865
Breed, Marvin A.,	Unknown,	1866
Bristol, Andrew J.,	Indianapolis, Ind.,	1871
Bryan, Frederick B.,	Chicago, Ill.,	1865
Carrel, Alexander S.,	Selma, Ala.,	1871
Cary, Edward S.,	Des Moines, Iowa,	1871
Chapin, Harlow,	New Haven, Conn.,	1871
Chapman, Joseph R.,	Detroit, Mich.,	1869
Cherot, Leonce,	Green Bay, Wis.,	1865
Connor, Lucius E.,	Fort Scott, Kan.,	1869
Connor, Thomas J.,	Brooklyn, N. Y.,	1867
Coutant, James L.,	New Rochelle, N. Y.,	1868
Curth, Nicholaus T.,	Chicago, Ill.,	1865
Daniels, John B.,	Atlanta, Ga.,	1871
Davis, Charles A.,	Terre Haute, Ind.,	1871
Davis, David, Jr.,	Allegheny City, Pa.,	1872
Delker, Frederick J.,	Hazleton, Pa.,	1868
Dietrich, Jacob W.,	Dayton, O.,	1856
Dodge, Levi G.,	Charlestown, Mass.,	1859
Dorsey, Thomas B.,	Dresden, O.,	1866
Dove, John E.,	Richmond, Va.,	1873
Duke, Augustin W.,	Baltimore, Md.,	1870
Eggert, Charles H.,	Bethlehem, Pa.,	1857
Ehrmann, John W.,	Chicago, Ill.,	1867
Fischer, C. F. Adolph,	Unknown,	1871
Fletcher, Frank E.,	Detroit, Michigan,	1866
Gallagher, James,	Unknown,	1865
Gamotis, A.,	New Orleans, La.,	1872
Geary, William,	San Francisco, Cal.,	1870
German, John W.,	Baltimore, Md.,	1870
Goodman, Bernhard,	Brooklyn, N. Y.,	1867
Gordon, Oliver F.,	Cincinnati, O.,	1857

Names.	Residence.	Elected.
Greatrex, Thomas J.,	San Francisco, Cal.,	1869
Greene, J. Henry,	South Amboy, N. J.,	1872
Griggs, Osmon J.,	Tomah, Wis.,	1869
Hankins, Bunting,	Bordentown, N. J.,	1865
Harrop, Joseph W.,	Leavenworth, Kan.,	1869
Hartnett, Eugene,	New York, N. Y.,	1873
Henkel, Augustus,	Unknown,	1865
Hickling, Dan. P.,	Washington, D. C.,	1867
Hunt, Leonard W.,	Macon, Ga.,	1871
Hunt, Nathan W.,	Lawrence, Kan.,	1869
Johnson, Newton A.,	Galesburg, Ill.,	1869
Jones, Charles S.,	Bloomington, Ill.,	1869
Jones, Frederick S.,	New York, N. Y.,	1872
Jones, George H.,	Unknown,	1869
Jordan, William H.,	Portland, Me.,	1871
Keaton, M. E. F.,	Unknown,	1871
Kern, Flora, Jr.,	Louisville, Ky.,	1868
Latham, Edward,	Pottsville, Pa.,	1871
Lawrence, Thomas,	Hamilton, Ont.,	1867
Lecky, Robert,	Richmond, Va.,	1873
Marshall, John B.,	Olathe, Kan.,	1871
Mason, Frederick E.,	Philadelphia, Pa.,	1871
Matthews, Charles C.,	Burlington, Iowa,	1869
McRae, William H.,	West New Brighton, N. Y.,	1861
Mead, Nehemiah,	Chicago, Ill.,	1865
Miles, Benjamin F.,	Peoria, Ill.,	1869
Miller, Polk,	Richmond, Va.,	1873
Moore, William M.,	London, Ont.,	1866
Morgan, George W., Jr.,	Bradford, Ont.,	1867
Murray, Allen F.,	Chicago, Ill.,	1869
Murray, Talbot C.,	Washington, D. C.,	1863
Neeley, Joseph F.,	Allegheny City, Pa.,	1872
Nelson, Wolfred D. E.,	Montreal, Ont.,	1870
Neustadt, Otto,	New York, N. Y.,	1873
Odena, Frederick M.,	Cincinnati, O.,	1866
Owens, A. Francis,	Rockville, Md.,	1873
Parker, Charles G.,	New Orleans, La.,	1870
Peck, Henry T.,	Philadelphia, Pa.,	1868
Pierce, John W.,	Richmond, Va.,	1873
Porter, Edward S.,	Junction City, Kan.,	1867
Price, Joseph W.,	Paola, Kan.,	1869
Reed, Philemon S.,	Philadelphia, Pa.,	1870
Reigart, John M.,	St. Peters, Minn.,	1871
Richards, Edward J.,	Hayward, Cal.,	1870
Richardson, Daniel W.,	Almont, Mich.,	1866
Richardson, James H.,	Cambridgeport, Mass.,	1868
Roberts, Morris,	Jersey City, N. J.,	1872

Names.	Residence.	Elected.
Sacksteder, Frederick,	Louisville, Ky.,	1867
Steel, Frank L.,	Memphis, Tenn.,	1870
Silliman, Lewis T.,	Columbia, S. C.,	1859
Skinner, Joseph S.,	Baltimore, Md.,	1864
Street, Daniel B.,	Washington, D. C.,	1867
Smith, Isaac W.,	Philadelphia, Pa.,	1867
Tapken, Theodore,	Green Point, N. Y.,	1868
Tanton, Thomas,	St. Louis, Mo.,	1865
Thompson, Wilbur F.,	Baltimore, Md.,	1870
Trinder William,	Philadelphia, Pa.,	1870
Vandenburgh, Abram C.,	Chicago, Ill.,	1869
Van Orsdel, William E.,	Philadelphia, Pa.,	1868
Van Sweringen, Hiram,	Fort Wayne, Ind.,	1865
Vogel, Richard,	Guttenberg, Iowa,	1867
Warfield, Abijah B.,	New York, N. Y.,	1870
West, Frederick,	Laporte, Ind.,	1866
Williams, William N.,	Danville, Pa.,	1873
Wright, Edward M.,	Prairie du Chien, Wis.,	1869

APPENDIX.

REPORT OF THE COMMITTEE ON THE DRUG MARKET.

Since the last report of this committee our country has again suffered the severe influences which follow financial revulsion, and the sad failures of large moneyed corporations, which occurred in the latter part of 1873, seriously affected the volume of business transacted in drugs and chemicals.

The larger portion of all material which may be classed as drugs and chemicals enters into consumption not as remedial agents, but into manufactures for domestic economy, and any stringency of finances at once causes a reduction of volume in business, especially those which depend upon the adornment of the person, or of our homes.

The usual fall trade fell short of the anticipations of dealers; the winter brought no appreciable amount of relief, and the spring trade of this year was, in a measure, shorn of its hoped-for proportions.

The plenteous harvests of cereals and of cotton, however, promise some comfort to those who hope for a more favorable business; and although the news from abroad, that crops of cereals in Europe are plenteous, does not promise large exportation of our food product, yet there is fair hope for revived traffic of all kinds.

The good effect of removing the tariff upon crude articles can be noted in the large importations of such material, and the advanced interest in manufactures here.

There appears at present to be no serious contending interests here regarding the tariff, so far as it relates to duties upon commodities which pass through the drug market.

The following figures, compiled by the writer from the statistics of importations for 1873, will give a fair idea of the value of imports of some of the leading articles, which may be called the "wants" of the people, as distinct from the "luxuries," and also the ratio and amount of duties collected upon each class:

Iron.—Value of imports,	$56,286,635
Duties collected,	18,333,888
Percentage of duties,	32.6
Wool.—Value of imports,	73,885,661
Duties collected,	38,490,560
Percentage of duties,	52
Silk.—Value of imports,	30,172,226
Duties collected,	17,283,315
Percentage of duties,	57
Cotton.—Value of imports,	31,810,670
Duties collected,	12,417,163
Percentage of duties,	39
Drugs.—Value of imports, DUTIABLE,	$12,202,344
" " FREE,	20,610,605
Total,	$32,812,949
Duties collected,	4,441,853
Percentage of duties on total imports,	13.5
Percentage on dutiable articles only,	36.4

It will be seen by this comparison that we have no cause to complain regarding the tariff on imports of drugs. The above figures differ materially from the statistics furnished by the department at Washington, as under each class is included all products which are fairly embraced under those heads. For instance, under drugs are embraced chemicals, argols, chloride of lime, barks, and many other items which are entered by the department as separate articles, but which, as they pass through the drug market, are properly embraced under the imports of drugs.

I regret that although I endeavored, both at the custom-house in our city and from the Bureau of Statistics at Washington, to get reliable figures of the imports for 1873 to July, 1874 (and waited for these until December 12th), yet I entirely failed to obtain them. The few figures given me do not embrace all the articles which properly come within the scope of this report, and to insert them, in comparison with the figures of the previous year given in the paragraph above, would give an erroneous idea of the imports of the past year.

The inspection of drugs prevents any great inflow of injured, adulterated, or deleterious drugs and chemicals. A recent visit to this department in our city enables the writer, from his personal observation, to speak of the great value which it is to all who desire to be freed from the dangers of worthless drugs sent to us from abroad.

In this respect our own land fares better than some of the European countries, for there any quality of drugs can be entered, the only risk being whether they are so poor that the price does not compensate. It may not be amiss here to state that the forty cases of opium, alluded to in the report of last year as being rejected at our custom-house, were recently reshipped to England.

The general supply of drugs has been quite equal to the demand of our land, and with a few exceptions, values have not fluctuated to any great extent. With a few, which will be instanced hereafter, the supply in the London and New York markets have been so large as to keep the price below a compensating value to the importer, while a few others have been *manipulated* to obtain fictitious values.

American Indigenous Drugs.—The sources of supply remain the same in regard to localities, but the East and North are fast giving way to the South as a source of supply to the wholesale trade.

The trade in botanic articles appears to be increasing each year. The old method of shipping this class of merchandise to the trade centres was in long bags loosely packed or in barrels. In days when rents were more reasonable, and this class of trade smaller, such loose packing could be readily accommodated by dealers, but with the larger stocks now carried it would require too much room. For several years it has been the habit of the Southern dealers in our indigenous drugs to pack all herbs and long slim roots in bales by aid of the cotton press; and while much easier to handle in this shape, they also have advantage in respect to freight and storage. Labor in the South is much cheaper than North and East, consequently with an almost unlimited supply of a majority of the indigenous drugs that grow in any climate in America, they have been able to supply the trade of the North, East, and West at much less rates than the same articles can be supplied there, although the Southern article has the disadvantage of increased freights.

With regard to quality, the principal houses in this branch of business have either a member of their house, or in their employ, some one who from a long practical experience in the cultivation or collection of such articles, knows how to select the better grades of these goods, and thus obtain the requisite quality, knowing full well that a careless selection of quality, or neglect to properly garble the drug, would only entail on themselves much greater expense elsewhere, or a total loss. The stock gathered last season was of good quality, and with few exceptions realized the usual average monetary value.

In the early part of the year, mandrake and black root advanced, owing to scarcity, while senega root declined, owing to more abundant supply. Much of the senega root had portions of the tops attached, which, while adding to its weight, depreciated the value.

The demand from China has kept up the price of ginseng. It is probable that American sarsaparilla root will be in somewhat short supply, while the high price which Scullcap commanded last season has led to a larger collection this year, and a probability of its decline in price. Those articles which are usually obtained from Florida appear to be in short supply, and southern prickly ash bark is growing scarcer. Elm bark has been sold in the Eastern market at less than the cost to procure and transport it, owing to the fact that it was purchased for speculative purposes, and that holders of it were obliged to realize on it. It has been shipped less freely, and may advance during the coming winter.

Trade Prospects.—The character of the drug trade has, during the past few years, undergone some peculiar changes.

During the late war there was a diversion of business which has been quite marked in the drug trade. Business with the Pacific coast was in part diverted to Europe, the Southern States obtained their depleted supplies from other sources, and the loss of debts due from the Southern merchants caused serious inconvenience to many. With the want of supplies for our army a new demand was created, and this was met in part through brokers who, under the compensation of a small percentage on high values, were enabled to realize good profits on little or no capital. With the gradual decline of values this profit is so much reduced that other means are sought to continue their livelihood, and resort is made to supply small dealers throughout the Union. Those who have tried this medium have found frequent cause to complain of the quality of goods supplied, and are by experience convinced that this is a very unsatisfactory mode of business. The close competition and rivalry existing not only among the leading houses in this city, but the competition of those in other cities throughout our land who are trying to become the large dealers of their locality, as well as extend their business to new fields, have tended to depress prices to a point which does not fairly compensate the dealer. With this reduction of price many have fallen into the habit of supplying goods of a quality which is not desirable, and very frequently the complaint is made by the retailer who purchases such goods that they are not satisfactory.

Again, the fault lies quite as much with the retail dealer, who, in his desire to buy at close prices, forces a competition which must, in the hands of some, lead to the furnishing of a *quality* of goods to meet such customers.

The result of all this is to depreciate business success, to lead to a sacrifice of quality for price, to cause a lack of confidence of customers in the remedies they purchase for use, as also in the retailer who dispenses such goods. The best quality will always command the best price, and when the purchaser in the drug market insists on having the *lowest figures*, he must expect to obtain a lower grade of commodities.

With the pressure of the times our branch of commercial traffic has suffered, both wholesale and retail dealers finding as a general rule a smaller volume of business. There is no doubt a change rapidly approaching, and when the finances of our nation have, by wise legislation, been arranged on a more satisfactory basis, an impulse will be given to all branches of commercial transactions.

The report of the Baltimore Drug Market is appended to the report of the chairman, the others of the committee not responding with information or reports.

Alcohol during the year has been very uniform in price, after the decline of last fall, which was due to small supply and an increased demand for foreign shipment. The price has ruled at about $1.81 to $1.86 per gallon.

The demand for foreign shipment has sensibly declined, and business is more restricted. It is usual for the distilleries to limit their product during the hot summer weather, and in many factories to cease the production of spirit altogether, owing in part to necessary repairs, or the greater trouble of condensing the spirit, and if the demand of the season should be larger than anticipated the price is liable to advance during the months of August and September. This may be likely to occur any season, and the market during those months will likely always rule higher than at any other season. There has been no change in the internal revenue laws affecting the tax on spirit.

Citric Acid.—In last year's report it was stated that this chemical was being manufactured here. It can now be stated that Messrs. Powers & Weightman have largely engaged in its manufacture, and the article as supplied by them is more satisfactory than much of the imported, as it is purer, dryer, and whiter than the foreign. The home product is now being produced in large quantities, and it can be depended upon in the future as a regular article of manufacture. The price has been quite uniform during the year, rating about $1.13 gold, per pound, which is lower than the English can be profitably imported for.

In connection with this it may be stated that as yet the source of American citric acid is from the imported lime-juice of Europe, which is concentrated before its exportation. The West Indies and Florida might yield an abundance of the lime-juice, as the mode of its preparation is simple, and profitable to the producer, but thus far but indifferent success has been realized, though it is not improbable that ere long ample supplies may be obtained from this source, and our manufacturers be entirely independent of European markets.

Tartaric Acid has been in full supply, and during the greater part of the year has been quite uniform in price, at about 48 cents, but recently has slightly appreciated, and is now about 57 cents, with every prospect of the price being maintained.

Sulphuric Acid.—Owing to a combination among the various manufacturers the price was advanced during the present summer, but this combination, like all others, has broken, and it can now be freely purchased at the old figures.

Oxalic Acid is still lower than a year ago, and the price has been as low as 14 cents gold.

Oleic Acid, a product of the candle manufacturers, has come into notice from its use in the production of the various pharmaceutical preparations of the *oleates.* It can be had *crude* in any quantity from the candle-makers at about $1 per gallon, but requires considerable manipulation to produce a sightly and stable mercurial oleate.

Ambergris.—This substance has recently been very scarce, and the price advanced from $12 to as high as $50 per ounce, but this extreme high price had the effect to bring out numerous small lots in this country and in European markets, and it again declined to $30, at which it is now held firmly. There was a large quantity of ambergris destroyed in the fire in Boston, and as there has been no new supply for a long time the entire stock in all quarters must be very small. During the year 1873 about $1000 worth was received from abroad.

Bermuda Arrowroot is in smaller supply than last year, and *true* Bermuda is now held at 55 cents, in small lots, with prospect of an advance.

Good *Jamaica Arrowroot* is scarce, but all other varieties are in full supply.

Annatto.—There seems to be more difficulty in procuring a satisfactory article than heretofore, and reliable brands are bringing advanced figures. Prime brands are worth 47 cents in quantity.

Balsam Copaiva, at the present time, is at the same value as at last report, 70 cents, although during the year it has been held at 80 and 82 cents. It is not likely to advance at present.

Balsam Peru has been very inactive, and prices remain without any material change.

Balsam Tolu has fluctuated considerably throughout the year, advancing during the latter part of 1873 to $1, then receding in the early part of 1874 to 70 cents, and recently advancing to $1.25, and now commands 95 cents.

Recently the journals have noticed the value of Wood Oil or Gurjun Balsam in certain forms of skin diseases, and some demand has been made for it.

Tonca Beans declined from $1.25 at the time of the last report to 75 cents in October; reached 64 cents in April; on receipt of news that the new crop had proved a failure price advanced to 75 cents, and since that time have continued to bring higher prices. Are now held at $1 and upwards.

Vanilla Beans are to be found in the usual varieties of quality. The new crop, a portion of which reached this city in April, was far less in amount than was anticipated, and prices advanced. Prime beans now command $27 at first hands.

Bark.—Cinchona Barks of all grades are in full supply, and manufacturers of quinia and the cinchona alkaloids have no trouble to procure suitable grades. A small quantity of East

India cinchonas have been received, but as yet they are not offered for popular sales.

Calisaya Bark has advanced slightly, being now held at $1.20 in small lots, and the *true* red cinchona at $1.

It is proper here to ask the question whether druggists who use *common* yellow bark and *common* red bark (as they are known in the market), for making tinct. cinchonæ and tinct. cinchonæ co., are complying with the requirements of the U. S. P., or even the requirements of common honesty?

There is an immense quantity of such cinchonas sold, both whole and in powder, and there is not only reason to suspect, but also to *believe*, that they are sold at retail at a price far above their monetary or medicinal value.

Cinchona barks have been sold in the London market as low as one penny per pound.

Bromine is now over-produced, and it is fair to believe the statement that the product for the past year was over 150,000 pounds. Its source is Pennsylvania, Ohio, and Virginia. Prior to 1872, those engaged in obtaining it enjoyed fair returns for their labor, but since then, owing to others engaging in its manufacture, an over-production resulted, followed by decline in price, and loss of profit in great part to its producers.

Large consignments to Europe have in a measure relieved the market, and as there is some prospect of smaller makers retiring from its production, there is a likelihood of an advance in price.

The chief difficulty heretofore has been in the handling and shipment of bromine, from a fear that its transportation is dangerous, but within a year or two that objection has been overcome by its conversion into bromide of iron, and shipment in the solid state, and the manufacturers' conversion of this into the various chemicals demanded in the market.

Bromide of Potassium has declined, and the price has fallen as low as 50 cents in large jobbing lots.

Bismuth is still more reasonable than a year ago, commanding about $2 per pound. The American source from which it was hoped to obtain the metal has proved a delusion, but large quantities are now received from Peru. It is likely to decline still further.

The preparations of bismuth have participated in the decline.

Borax.—Owing to the immense supplies which are received from California, Colorado, and Nevada, the price has still further receded from 20 cents last June to 14 cents at the present time for large jobbing quantities. It is now being forwarded to England from the Pacific coast, and the price has declined somewhat in Europe.

The consumption of borax in this country does not exceed 600 tons per annum, while the amount which has been thrown upon the markets is far beyond that.

Camphor has been in abundant supply, and the price has been uniformly low during the year, ranging from 25 to 31 cents, the lowest price being in December, advancing in April to 31 cents, since which time it has been below 30 cents. The small profit which it has yielded to refiners has caused some to temporarily suspend their works.

Cantharides have been in abundant supply, and the market has fallen. Fine Russian flies will not bring over $1.75, if that. Recent reports state that cantharides are not likely to be as abundant this season, as the "catch" is smaller than usual. This would indicate a probable advance ere long. Chinese flies have been imported recently and offered at a still lower figure. Some experiments upon the blistering effect of the Chinese flies have proved entirely satisfactory.

Cochineal.—Owing to the abundant quantity of these animals collected, and the demand being somewhat less vigorous, prices have declined. Stocks of last year on hand are still plenteous, and the prices now asked of 50 cents gold are hardly likely to be maintained.

Chloroform and *Ether* have fluctuated in price according to the cost of alcohol.

Cloves have fluctuated greatly in value, owing to the reported destruction of large plantations in Zanzibar by a cyclone.

Previous to that disaster, the price was about 15 cents gold, but they have since sold at from 35 cents to 45 cents gold, commanding the latter price at the present time. It is asserted that but few cloves will be gathered this year, owing to the blossoms being destroyed by excessive heat.

During 1873 about 1,500,000 pounds were imported into the United States.

Croton Chloralhydrate has now become a staple commodity, and thus far is entirely of German manufacture.

Its present value is $2.50 per ounce.

Chloral remains without material change in value.

Cassia has been in abundant supply, of only moderately fair quality, at 25 cents gold throughout the year.

Cassia Buds, during the early part of 1874, were held at 48 to 50 cents, but a speculative movement forced them up in April, and since that time they have commanded from 58 to 65 cents.

Ergot has been in fair supply, but the quality as found in the market during the year has been quite variable, though prime could always be procured at its value. Price has ranged from 23 to 47 cents, the higher price having been obtained in April, after which it declined to 37 cents.

Glycerin is now a manufacture of vast proportions, and with the increase of product and competition, prices have declined. A prime article which will answer all the tests of purity can be procured at first hands for 17 cents.

Guarana.—This article is now meeting with much demand, as it has proved very efficacious in various forms of headache. There appears to be considerable difference in the appearance of some of the specimens, which is even more observable when they are broken, and it is said that much of it is of poor quality. It has commanded from $2.00 to $2.25 per pound.

Gum Arabic has been without interest; no changes to note. A few cases of unusually fine quality have come to this city.

Tragacanth has been in abundant supply at easier figures.

Assafœtida has been in light demand at 28 to 30 cents for a prime article.

Aloes of all kinds have been plenty and unchanged in value. Some of the samples of so-called Socotrine have been of quite inferior quality. Much of that sold in powder, as of the higher grades, is made from Curaçoa aloes.

Benzoin has been in ample supply, without any fluctuation in value.

Shellac continues to advance, and a prime article now commands 70 cents per pound.

Opium.—At the previous report the ruling price for this drug was $8 currency, and during the remainder of 1873 it fluctuated between $8.20 July 1st, $8.75 near the close of the month, to $8.20 again in August, averaging $8.10 in September, $8.00 in October, $7.70 in November, and $7.80 in December. In 1874 prices averaged, in January, $7.37; February, $7.25; March, $7.88; April, $9; May, $9.40; June, $10.25. The cause of this advance in opium is due to the injury to the new crop of 1874. In February news was received from Smyrna that the frosts had injured the young shoots, which had then just appeared. Later reports confirmed this, and although there were efforts made, by spring sowing of the poppy, to secure a fuller crop, yet it is evident that the crop gathered this year is below the average in amount. The average crop of Asia Minor exported from Smyrna is about 3000 baskets, which would be equivalent to about 2800 cases as we now import it. The crop last year was a small one, the yield being about the same as this year, but the year preceding (1872) the yield was unusually large (6500 baskets). The average consumption is nearly 4000 baskets, or about 300 baskets per month. There is, therefore, a short crop for two years in succession, and were it not that there are stocks of opium in reserve the price would now be still higher than it is. This reserve is held by speculators, principally in London and New York, and should opium materially advance, as there is at present indications which point to such a result, these speculators will probably put their stocks in the market.

During the past year our knowledge of the commercial statistics of opium, as also of the practical cultivation and harvesting of this important drug, has been largely increased, mainly through the efforts of Mr. A. H. Jones, and this information has been given in the form of circulars issued by the Philadelphia Drug Exchange. Believing that they will be of much interest to the readers of this report the writer has collated the points of greatest interest, and herewith appends them.

"It is astonishing how difficult it is to procure anything reliable touching almost all articles of *Eastern* cultivation. Gross ignorance and prejudice combined are obstacles hardly surmountable.

"Authentic information regarding *Opium* is as desirable as it is difficult to obtain. The reports are, at times, so conflicting as to the *frosts damaging the new crop ;* so questionable as to *stocks of the old*, held in the interior ; the predictions as to future prices so uncertain, and the reasons for past fluctuations so unsatisfying, that the buyer's venture too often begins in confusion and ends in loss.

"*Turkey Opium* has been very disappointing this season to both speculators and consumers. From the position it was in last August, and the certainty of a crop of 2500 to 3000 chests only (probably but 2000 to 2500 of really prime quality), high prices seemed assured, but the panic came in this country, and monetary disturbances accompanied it in Europe, and the markets have never recovered in consequence. Throughout Europe the winter has been exceedingly mild, and if unseasonably cold weather or frost should come on in the *Opium* district a rapid advance in price might at once take place. (Such has occurred since writing the foregoing.)

"Attention has been called to the *increasing* cultivation of native Opium in China, and the growing preference for it over the Persian and Indian descriptions, on account of its greatly reduced cost. This is an important fact, and may react most unfavorably on the prospects of both Persian and Indian Opium if it further develops.

"A recent German work just published, on Smyrna, by the

Austrian Consul there, Dr. Carl von Scherzer, contains some interesting points, which we have translated, and take pleasure in presenting.

"Among the numerous products of Anatolia or Anadolia, in Asia Minor (western district of Turkey in Asia), none possess such importance for cultivation as *Opium*—the most considerable and valuable of exported drugs.

"Asia Minor forms the most northerly point of that vast tract of land in which the Poppy flourishes best. Beginning in East India, its culture spread by degrees to Egypt, Algeria, Anatolia, and lastly to Persia, where, at the end of the last century, the Dutch colony, whose members had most important possessions in the interior of Asia Minor, introduced the Poppy.

"The Netherlands Trading Company gave the impulse to it by their shipments to the Dutch colonies of India and Java. Even at present that company buys about the fourth part of a medium harvest for the requirements of their commercial places in the Indian Archipelago.

"At that time Opium was used solely for smoking, and also exclusively by the Asiatic people. The use of it for medicinal purposes was then very unimportant, and the manufacture of Morphia belongs to later times. (To Sertüner, an apothecary in Eimbeck, Hanover, is credited the discovery of Morphia—1817.)

"The cultivation of Opium requires a clayey soil which has not lain fallow, but that has been tilled in former years. Should it not have been manured for its previous crops, then it must be covered with stable manure and ploughed twice across. In the second (not too deep) furrow the seed is sown. To cover the seed lightly a tree with strong boughs is drawn over the field by oxen; care must be taken, however, that the ground does not become too wet between the time of ploughing and sowing.

"The bright, that is to say, the white and yellow seeds, are preferred, as the white and yellow buds form stronger poppy-heads, and give more juice and gum; while the gray and black seeds are not so good, because the blue and dark-red buds have no heads, and yield up less juice and dark-colored Opium. The pale-colored Opium also possesses, by chemical analysis, more Morphia than the dark.

"About three-quarters of a pound Zollweight of Poppy seed is reckoned to the 'dunun,' which, however, before the sowing, are mixed with four times the quantity of loose earth or sand to secure a more uniform sowing, which otherwise would be difficult to obtain with the smaller seeds.

"The end of October or beginning of November is considered the most favorable time for sowing, and in fact when, after the first rain and by timely fine weather, the land is suitable for ploughing.

"The sowing takes place in the same manner as that of the garden-poppy in Europe. (The garden-poppy, cultivated in South Europe on account of its seed, yields a good strong Opium, but the production of it costs too much, because it is not grown in quantity.) The seed requires about fourteen days to spring up. Should the seed, however, be unable, on account of night-frosts and the consequent crusted covering, to come through, the field is ploughed again, the end of November or December, and then resown.

"During the winter the plants remain small and only make progress in the root, which strengthens itself in well-ploughed land, and does not suffer, even if night-frosts damage the plant. With the arrival of spring weather the plant grows all the quicker—the stronger the root is, the more successful the sowing. Now comes the time of hoeing, lightening the plants, during which the weeds and even the poppy itself, when it stands too thick, must be removed. Sometimes even a second hoeing is necessary on account of the growth of weeds.

"The plant then grows quickly, and throws up 1 to 4 stems, of 3 to 4 feet high, which by the end of April or beginning of May bear buds. After the shedding of the buds follows the formation of the poppy-head, which takes about two weeks. The time of ripeness is discovered by light pressure of the fingers. The ripe head of the poppy plant (Papaver somniferum) feels rather softer—the unripe, hard. To seize this period is of the greatest importance, and as soon as one is persuaded of the ripeness there should be no delay with the incision. For the harvest itself only a few days are permitted, as should over-ripeness set in, that is to say, 6 to 8 days after ripeness, no juice flows from the incised poppy-heads.

"The incision takes place in the evening, with small, sickle-shaped knives, a circular cut being made in the middle of the heads. This is done most easily by taking hold of the poppy-head by the thumb and forefinger of the left hand, and making the half circle with the right hand; by slightly twisting the poppy-head, and without changing one's position, the other half circle can be made.

"After the incision is made (which, however, must not penetrate into the capsule, as the juice would then flow inward and be lost), the white poppy juice exudes around the whole incision. This must dry 6 to 8 hours in the sun, during which time it thickens to a resinous yellow and then to a yellow-brown mass. It is then scraped off with knives, and kneaded with the hand into round loaves of the desired size, whose weight, however, seldom exceed 2 lb. Zoll. These are wrapt in poppy-leaves and allowed to dry in the air 2 or 3 days. The still soft loaves are now packed in baskets or willow packages, lined with linen. In order to avoid alteration in shape of the loaves or their sticking together, sorrel seeds are plentifully strewed between them. To a harvest of 5 'dunun' about 10 laborers are required, so as to complete the harvest quickly, for reasons abovementioned. The average yield of a 'dunun' is reckoned about 4 lb. Zollweight.

"In Asia Minor Opium culture succeeds almost exclusively in Kutaya, Uschak, Karahissar, Balikissar, Afium, Sparta, and Koniyeh, which are, for the most part, protected by lines of hills from the influence of cold winds, and whose heavy maize-land is specially adapted to it.

"[*These districts derive their names from the principal towns within their limits.*

"*Kutaya or Kutaiah* (*Cotyacum*), *a town of Asia Minor*, *Anatolia*, *in latitude* 39° 24′ *north*, *longitude* 30° 19′ *east.*

"*Ushak*, *a considerable town of Anatolia*, 64 *miles southwest from*

Kutaiah, and where the finest Turkey carpets are made for exportation.

"*Kara Hissar* (*Turkish for 'Black Castle'*).

"*Balikesr, Balu-Kissar or Balik Shehr, a town of Anatolia,* 75 *miles southwest from Brusa.*

"*Afium* (*in full, Afium-Kara-Hissar, i. e., 'Black Castle of Opium'*), *a city of Anatolia, capital of Sanjiack, situated on a mountain side,* 50 *miles south-southeast of Kutaiah.*

"*Koniyeh or Koniah* (*Iconium*), *a city of Asia Minor, capital of Karamania or Koniyeh, latitude* 37° 51′ *north, longitude* 32° 40′ *east.*]

"The chief arrivals reach Smyrna from the interior, as a rule, the end of July or beginning of August. Fresh Opium, on account of its moisture, does not immediately find buyers, but old, dry Opium is much preferred, and brings higher prices.

"After the settlement of a purchase, the Opium is examined, in the presence of both parties contracting, by one of the competent judges acknowledged by the commercial community, and all pieces are rejected which do not belong to the quality bargained for, or which, on account of mixture with other ingredients, have a less value. The pieces rejected by the judges are taken back by the seller, and these are generally bought by German and French morphia manufacturers at a concession. The Opium, thus sorted, is hermetically closed in tin cases, and these packed in wood cases ready for shipment.

"The best quality of Opium comes from the district *Kukatchia* (or Kutaya), especially from the village called *Bogaditsch* and its neighborhood. This place delivers loaves of small, round-shaped, light-brown, bluish, glittering color, with a penetrating smell. Its yield of Morphia reaches 11 to 11½ per cent.

"The Opium from the Western parts (*Kentabir*, *Akhissar*, *Kurkaghatsch*), known in commerce under the name of YERLI, contains a less percentage of Morphia, say 8 to 10 per cent.

"To this follows the product of *Afium* and *Karahissar*, known under the name of '*roba mercantile*' or '*roba commune*,' which appears in larger quantities on the market. This consists, generally, of loaves of dark-brown, almost black, color, and contains only 7 to 9 per cent. of Morphia.

“The lowest quality is represented by the production of the province of *Koniyah*, which comes into commerce in small, hard loaves of dark color, with a yield of Morphia, at the most of 7 to 8 per cent., under the name of ‘*Adet*’ (ordinary).

“(This difference in quality, of course, affects the price, as will be observed by reference to the quotations named in Smyrna, *e. g.*,

“SMYRNA, January 31st, 1874.

“ Bogaditsch	@ 210^{p}	per Tscheki,	or	24*s.* 3*d.*	per lb.	f. o b.
Yerli	@ 190^{p}	“	“	21*s.* 9*d.*	“	“
Karahissar	@ 185^{p}	“	“	21*s.* 3*d.*	“	“
“ old	@ 180^{p}	“	“	20*s.* 9*d.*	“	“
Current quality	@ 180^{p}	“	“	20*s.* 9*d.*	“	“)

“The price of the Opium depends to a great extent on the abundance of the harvest. This ranged in the last year (1872) between 4000 and 7000 baskets, of about 150 pounds Zoll-weight (customs-weight). This may be reckoned, under normal circumstances, with a harvest of 4000 *couffes* (chests) at an average rate of 200 piasters (piaster = 2*d.* or about 4 cents gold) per *Tscheki* (Tscheki of Smyrna = 1⅝ pounds avoirdupois), or 23*s.* 7*d.* English per pound, or 34½ francs per kilagramme, or 18 florins 15 kreutzers per Vienna pound.

“With a harvest of 7000 couffes, on the other hand, at 120 *piasters*, or 14*s.* 2*d.*, or 20 francs 46 centimes, or 10.75 florins, f. o. b., Smyrna.

“It becomes obvious that there will be a small harvest, when, for instance, rain has deluged the sowing for a fortnight, when strong night frosts damage the young plants, and lastly, when in the months of March or April, rain is wanting, or suddenly sets in when the poppies are ripe.

“The price of Opium is, beyond this, influenced by,

“1st. Stocks of the previous harvest in *Smyrna* and *London*, as the chief markets for the article.

“2d. The demand for *America*, which, latterly, has absorbed considerable quantities for its westerly districts, less for medicinal purposes than for the Chinese emigrants, who have settled down there, since the construction of railways in California.

"3d. By the Persian and Indian harvest, Persia has, for some years, cultivated Opium in its interior with success, and considerable quantities of it had already appeared in the European market, when two years ago (1871) the culture of this lucrative product was checked by the famine in that country. India, the most eminent of the Opium-growing places, is not in a position, even in the most favorable harvest-years, to cover the demands for China, and often an important quantity is taken from Smyrna for that country.

"4th. The price is influenced by the quantity offering and the demand. The fluctuations, which, during a single season, that is to say from the beginning of August to the end of May, often reach 100 piasters per Tscheki, offer to the speculator an opportunity such as no other article presents.

"One may reckon that more than a fourth part of a year's yield goes into the hands of the local speculators, apart from which similar speculation takes place on the London and New York markets. In addition to this, the article finds daily buyers, and speculation may arise independently of consumption, so that it often happens that prices in the distant markets are lower than at the place of shipment.

"It will readily be seen from these remarks that a prime Opium, rich in Morphia, costs the importer more than such as is known as current quality, the difference in intrinsic value being thoroughly recognized in Smyrna, and there prices are made to correspond.

"Usually cable quotations have reference to current quality. The superior grades, as already stated, command higher figures, and sometimes the difference is quite marked, thus:

November 2d, 1872.	Current quality, . .	225^{p}
	Carahissar, . . .	230^{p}
	Yerli, ...	232^{p}
	Bogaditz, . . .	250^{p}

"Here the difference between the two extremes is 25 piasters per Tscheki, or about 73 cents, gold, per pound.

"The price of Opium therefore, as with most articles, depends upon quality, and an Opium purchased at high prices with reference to its percentage of Morphia cannot be sold at a profit, in a jobbing way, in competition with ordinary shipping grades. The current quality, however, may yet be very good.

"For the most part, it is to be *assumed*, that the Opium shipped to this country is of good quality, as by United States customs regulations it *should* be rejected if judged to contain less than 9 per cent. of Morphia.

"As has been remarked, the price of Opium is often lower in distant markets than at the place of shipment, and it also frequently happens, that jobbing lots can be bought in this country below the cost to import it in quantity from Smyrna or London. At times such a state of the market is wholly unaccountable, *e. g.*, March 21st, cable Smyrna 210$^{\text{p}}$, equal to about $8 currency, duty paid. No lower quotation has since been received up to this writing, and notwithstanding the advices as to damage by frost, the jobbing price, from the date named up to the present, in this country, has ruled lower than the cost to import. Hence this article offers little encouragement to the wholesale druggist to become an importer of it, and while in years past it was quite usual to find parcels of a number of cases of Opium in the warehouses of every large drug dealer, of late, stocks have concentrated in the hands of a few—those who made a specialty of handling it, who buy in very large lots, or who have it consigned to them, or both, and the manufacturers of Morphia.

"The Opium seasons are reckoned in Smyrna from June to June, say from June 17th, 1871, to June 22d, 1872, as during this month arrivals begin to come in from the interior, and accounts are then made up by correspondents, as to the extent of the old crop. Quotations are made in June for both old and new Opium.

"In February and March reports as to damage by frost are to be expected—it is one of the most plausible reasons to influence a speculative advance, and it is seldom neglected—although an estimate at all accurate can hardly be determined until the snows have melted away, say towards the close of March. It must be admitted, however, that the Poppy plant is exceedingly sensitive to any extreme of temperature, whether of cold or heat, rain or drought, and no correct estimate of the yield can be made until the drug is safely deposited in the baskets.

"It is to the interest of dealers in the interior sometimes to misrepresent facts as to stocks held, as well as to damages incurred by unfavorable weather, and unless the merchant in Smyrna sends a reliable representative to make personal investigation, he can give but questionable statements to his correspondents.

Opium exported from Smyrna, from January 1*st to December* 1*st,* 1873.

To London,		476 cases.
" Liverpool,		602 "
" " in transit for the United States,	773	
" America,	458	
		1231 "
" Marseilles, etc.,		123 "
" Trieste, etc.,		57 "
" Rotterdam (Dutch),		200 "
" Singapore, etc.,		135 "
		2824 "

"This shipment in 1872 amounted to 4424 cases, of which 1753 were for America."

Iodine.—The supply of iodine has heretofore depended chiefly from Scotland and France, the supply from Ireland being quite inconsiderable, but within two years past an appreciable quantity has been thrown on the London and Paris markets from Peru. Attention was first called to this source of iodine about three years ago. It was then stated that about 90 pounds was obtained daily at Tarapaca, and the process for making it from the mother liquors from nitrate of soda is described as being very inexpensive compared with that in vogue by the Scotch and French manufacturers. The annual production was, in May, 1871, said to be about 30,000 pounds. This statement was not over-exaggerated, as the quantity offered so far this year has exceeded it.

The effect has been to reduce the price greatly, and iodine hardly brings one-half what it commanded two years ago. As the cost of producing iodine in Peru is so far below that of the European makers, there has been some advances made, hoping to combine the interests of all, and induce the Peruvian makers to "pool" their product, and combine to control the price. If this is accomplished, the price of iodine will advance considerably, but, should it prove unsuccessful, it may reasonably be expected that iodine will decline still further. At the previous report, iodine was commanding $8.65 per pound. A gradual decline brought it down to $6.50 in January of this year, and in July to $5.50.

The home consumption of iodine in 1873 was 50,000 pounds.

Iodide of Potassium has followed the depression of iodine during the year, and can now be bought by the case at $3.50 per pound.

Mercury.—During the year the monetary value of this commodity has been constantly appreciating. The internal dissensions of Spain continue, and while this revolution lasts, the products of the mines of that country are decreased, and there is continual uncertainty as to future supplies. The Rothschilds manage the London market, and are sellers to a limited extent only. Our supplies come entirely from California, and here we find that the mines produce smaller quantities than in previous years. Many new mines have been attempted, but nearly all have been abandoned as unprofitable, and only the old mines have continued to produce the metal, although in each of these (especially the New Almaden mine) the yield of metal has been less than that of last year.

In the early part of 1873, mercury could be bought at 90 cents gold, but it has been gradually advanced until it now commands $1.75 gold, with prospect of further advance. The product of the California mines in 1873 was 28,600 flasks, and in 1871 it was 42,000 flasks. The largest portion of this finds its way to Mexico in use in the silver mines of that country, the next largest consumer being China, where it is manufactured into vermilion.

The mercury mines of Borneo are now producing but little, and none is now offered in any market. This variety of mercury is preferred by looking-glass manufacturers, who affirm that it is purer, and of a more brilliant color than either the Spanish or California article.

The product of the Austrian mines is but little at present, and from the fact that it does not appear to be offered for sale in the London market, it is evident that in spite of the high prices it is needed for home consumption.

The chemical products obtained from mercury have also advanced in price, and are now held at higher figures by the manufacturers.

Morphia and its salts have followed the fluctuations of opium, and the salts in general use, sulphate, muriate, and acetate are now held at $6.50 per ounce by the manufacturers, although old contracts are being filled at lower figures.

This chemical is one of the favorites for speculation among outsiders. In spite of the fact that this kind of gambling is almost as ruinous as that of stocks or cards, yet there are still plenty foolish enough to venture on the uncertainties of a rise by which they may make money, while the probabilities of a loss are even greater.

Musk.—The bulk of this article that comes to our city passes through the hands of one house, who have their agents in China to secure desirable lots offered there. It appears to be more difficult each year to obtain this commodity, and still more difficult to keep the natives from tampering with its quality. There has been no material change in value.

Oil of Bitter Almonds has declined to $7.75, nearly $2 less than a year ago.

Oil Anise has been abundant at $2.32 gold.

Oil Bergamot advanced from $4.35 gold in July, 1873, to $5.50 gold in July, 1874, and prospects are for further advance, as it is stated that the product of the season is smaller than usual.

Oil of Cassia has declined from $1.80 gold to $1.10 gold, believed to be caused by over-production.

Castor Oil, as now found in this market, is mainly supplied to the trade by one manufacturer, who furnishes the brands familiarly known as "Crystal" and "A A," which have almost supplanted all others. The quality of these brands is very satisfactory, and the production is adequate to the demand. Western oil is received in limited quantities, but East India oil is virtually excluded by the duty precluding its sale to compete in price with that of domestic manufacture.

The price throughout the year has been quite uniform, though a recent advance of 3 cents per pound makes the price of the manufacturer at present 23 cents.

Oil of Cinnamon has advanced considerably, and is now held firmly at $30 per pound, although one very choice lot imported specially to order brought a price considerably above this figure. Most of the oil now offered for sale is impure.

Cod Liver Oil has declined in price, as our astute officials have rendered a new decision lessening the duties upon it. The price is now $1.30 per gallon in lots of five barrels.

Oil Lemon has fluctuated during the year, being $3.70 gold in July, 1873; $3.40 gold in February, 1874; $4 gold in April; $3.20 gold in April; $3.75 gold in May, at which price it was sold in July with no prospect of much change.

Oil Peppermint has advanced materially, owing to injury to the crop from frost. In July, 1873, the market value of prime can oil was $3.10. At the close of the year it had advanced to $3.25, in February, 1874, to $3.75, in April to $4.87, May, $5, and this price was maintained until the close of this report.

Considerable adulterated oil has been offered during the year, and one lot in particular from Michigan was sought to be traded for drugs by a dealer in oils and drugs from that State. This lot of oil was probably adulterated with some oil obtained from some variety of pine or spruce which is not generally known to the trade, as it did not respond to the usual tests employed, and was detected more by the lack of pungency in the peppermint odor, than by any other test that was applied.

Oil of Sassafras has been in abundant supply at very low prices, although it is now stated to have been bought up to hold for an advance.

Oil of Rose is likely to be advanced in price, the producers averring that the yield is light this year.

Oil of Wintergreen has varied in price, owing principally to full or scanty supply in hands of holders. In November last it was sold at $4; in March of this year at $5.40. It now commands $4.35.

Pepsin.—This article which, until within a few years, has been almost entirely of foreign origin, and of infrequent use, has become a manufacture of large extent, the credit of which is eminently due to our valuable member Emil Scheffer. The process devised by him produces it so readily that it has a reliability which never was accorded to the foreign article most in use.

Owing to the competition in manufacture of this article the producers have gradually lowered the price, so that it can now be purchased for about one-half the price at which it was held two years ago.

Chlorate of Potassa has steadily declined during the year, and importers of it under contracts have been heavy losers. From 34 cents gold, it has dropped to 24 cents gold, with prospect of further decline.

The other salts of potassa have experienced no change during the year deserving special notice.

Quinine.—The market has been kept in abundant supply by our manufacturers, and the advance of price, which usually occurs in the latter part of the summer, has not this year (September, 1874) been realized. Those who usually make contracts for the supply of this chemical renewed their contracts last spring, most of them with an increase over that of the preceding year. It was supposed that the serious over-flows of the Mississippi would occasion a great amount of malarious disease, but the season up to this date has been unusually favorable to health in this particular, and the demand for quinia has been much less than was anticipated. It has been supplied at the same price, $2.50 per ounce, throughout the whole year.

The introduction of sulphate of cinchonidia during the past year has been attended with success not only to its manufacturers, but it has proved an efficacious remedy, which will warrant its taking rank as an article of standard medicinal value.

Roots.—Belladonna Root is found more freely in the market during the year, of good quality, and meeting with considerable demand. The average price for the year has been 22 cents.

Colchicum Root.—English root is entirely out of the market, only the German being at present obtainable.

Ginger in full supply, of good quality, though much of the "bleached" has an unnecessary amount of inert matter on its surface.

Ginseng advanced from $1.05 in the early part of the year to $1.50 in June.

Ipecac in moderate supply, in price ranging from 85 to 90 cents gold.

Jalap has been a *drug* on the market, enormous quantities having been sent here, much of which was worthless, and properly was rejected at the custom-house inspection. The writer saw about two hundred bales there in one lot, fully one-third of which was worthless. The price, which in September, 1873, was 30 cents gold, has fallen to 15 cents gold.

Rhubarb.—This drug has been in full supply in all its varieties, from the cheap flat to the choicest round Chinese root, and at comparatively low figures.

But little is imported direct from China here, owing to the loss by its insect enemies, the long voyage, and the fact that the New York market can be supplied at a lower rate by procuring it direct from the London market, avoiding risks of loss, and involving smaller capital with better chances of profit. The London market has been a continual loser during the past year, the sales there having sacrificed over $20,000.

The sales and demand for rhubarb have declined during the year.

Sarsaparilla Root of Mexican growth is being forced upon the market, and, owing to its comparatively low price, is finding some purchasers. Honduras sarsaparilla has fluctuated between 33 and 41 cents during the year.

Seneka Root has been in fair supply, quality a good average, but has fluctuated greatly, owing more to the supply on hand to meet the demand than any other reason. A year ago it commanded 95 cents to $1, and while much of the time it has held that figure, occasionally the price has dropped as low as 62 cents.

Squill Root, which is generally in full supply, was during the spring of 1874 quite scarce, and as high as 22 cents were paid for small lots.

It can now be had in abundance at 14 cents, with prospect of a decline.

Seeds.—Cardamoms have been plenty, of good quality in each of the various kinds which come to this market, with the importation of a few cases of unexceptionally handsome appearance. Good Malabar seeds have varied in price from $1.50 to $2.15, while the extra variety alluded to above commanded $2.50.

Colchicum Seed.—The German variety alone is now found in our market, and this has advanced to 30 cents.

Linseed of prime quality, and well cleaned, is not so freely seen, much of the Western seed being now bought up, crushed, and manufactured into oil, near the place of growth.

List of Drugs rejected by the Inspectors, at the New York Custom-House, during the year ending June 30th, 1874.

Bark, Peruvian,	6 bales,	Damaged by water, and unfit for medicinal use.
“ Buckthorn,	1 bale,	
Flowers, Camomile,	2 casks,	
Marshmallow Root,	1 bale,	
Blue Pill,	1 case,	Damaged.
Opium,	33 cases,	Not of requisite strength.
Scammony,	20 pounds,	“ “ “
Jalap Root,	1 bale,	Unfit for medicinal use.

Since June 30th, 1874.

Gum Guaiac,	2 cases,	Deficient in quality.
“ “	5 barrels,	“ “
Jalap Root,	200 bales,	“ “

P. W. Bedford,
Chairman of Committee.

REPORT ON BALTIMORE DRUG MARKET.

For the past year the drug business of Baltimore has been active both in indigenous and foreign drugs. Importation has been large and more general than heretofore, and the quality of importations improved.

The market for domestic drugs is steadily increasing, and owing to the increase in the manufacture of pharmaceutical preparations there is an increasing demand for a greater variety of indigenous barks, roots, and herbs.

Heavy chemicals, as sulphuric acid, Epsom salt, hydrochloric acid, chromate and bichromate potash, etc., are largely manufactured, of superior quality, and find a ready market.

Oil of Wormseed.—The crop of Baltimore oil of wormseed was large, of good quality, and average price.

Oil of Pennyroyal.—No Maryland oil in the market.

Oil Sassafras.—The supply of this oil has been large, of good quality, at low price.

Pink Root.—The supply has been small, of good quality, and commanding a higher price than usual.

Virginia Snakeroot.—The supply has been large, but quality not as good as usual.

Seneka Root.—The supply has been of good quality, but limited in quantity, and price high.

Sassafras Bark.—The supply is large, quality good, and price low, from 4 to 8 cents.

Wild Cherry Bark.—In good supply, of superior quality, with small demand; price 6 to 10 cents.

Scotch Broom is abundant in this market, of good quality, at 12 to 20 cents.

Ginseng is in large supply, and held at high price.

Elm Bark.—This bark is in large supply, of poor quality, and low price.

The retail trade has felt the effect of the panic, and has been very light for most of the year.

William H. Brown.

EDITORIAL NOTE ON MR. EBERT'S PAPER ON CINCHO-QUININE.

THE Secretary has received the following note, which is here published, as it corrects a statement made by Mr. Ebert averring the absence of quinia from this preparation. It is but proper to state in this connection that Mr. Wenzell's analysis was made in the early part of 1870; that the query, "What is Cincho-Quinine?" was accepted by Mr. Ebert in September, 1873; that of the five qualitative analyses alluded to in the letter, four were made in December, 1874, and one, that of Professor Merrick, in the spring of 1870, and that the manufacturers state that no change in composition or method of manufacture has been made.

BOSTON, January 8th, 1875.

PROFESSOR JOHN M. MAISCH,
Permanent Secretary of the American Pharmaceutical Association,
145 North Tenth Street, Philadelphia, Pa.

SIR: In reply to the article of A. E. Ebert on page 448, "What is Cincho-Quinine?" we answer: As its name indicates it is wholly composed of the bark alkaloids, viz., cinchonia, quinia, quinidia, cinchonidia, and the other alkaloidal principles present in Peruvian bark; and no change has been made in its composition or method of manufacture since it was first introduced by us.

We herewith add the testimony of distinguished chemists whose ability cannot be questioned.

CHEMICAL LABORATORY OF THE UNIVERSITY OF PENNSYLVANIA,
WEST PHILADELPHIA, December 21st, 1874.

MESSRS. BILLINGS, CLAPP & CO.,
Boston, Mass.

GENTLEMEN: At the request of Mr. C. S. Davis of your firm I have sent for a bottle of Billings, Clapp & Co.'s Cincho-Quinine, which was received from Messrs. Rosengarten & Sons under their seal [R. & S.]. I have tested the same by the four most characteristic tests for quinine, and have found decided quantities of this alkaloid by each of them.

Yours truly,
F. A. GENTH,
Professor of Chemistry and Mineralogy.

BOSTON, December 1st, 1874.

MESSRS. BILLINGS, CLAPP & CO.

GENTLEMEN: At your request I procured a bottle of your Cincho-Quinine from Messrs. Cutler Brothers & Co. It was undoubtedly genuine, being inclosed in your lithograph wrapper, and bearing your label on the bottle, and stamp upon the cork.

I have made a careful examination of the contents of the bottle, and have detected cinchonidine, quinidine, cinchonine, and quinine.

S. P. SHARPLES, Ph.D.,
State Assayer of Massachusetts.

CHICAGO, December 16th, 1874.

This certifies that at the request of C. S. Davis, of the firm of Billings, Clapp & Co., I procured a sealed bottle of Cincho-Quinine, and that I have tested the same for quinine, and that I have found that it gives the reactions of that alkaloid very decidedly.

G. A. MARINER,
Analytical Chemist, 77 South Clark Street, Chicago, Ill.

CHICAGO, December 17th, 1874.

This is to certify that I have purchased an ounce bottle of Cincho-Quinine, bearing the label of Billings, Clapp & Co., from a druggist in this city, and submitting it to acknowledged tests for the presence of quinine obtained reactions of that alkaloid beyond question.

JAMES R. BLANEY,
Analytical Chemist, corner Randolph and Dearborn Streets, Chicago, Ill.

Professor Merrick, of this city, Professor of Chemistry in the Massachusetts School of Pharmacy, four years ago, in the spring of 1870, examined a vial of Cincho-Quinine, and found abundant evidence of the presence of quinine.

It will be noticed that the above analyses cover a space of some four years.

In view of our business record for the past eighteen years we do not feel called upon to reply to the statements in the paper of a personal character.

Very respectfully yours,
BILLINGS, CLAPP & CO.

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